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REPORT

OF THE

AGRICULTURE

OF THE

COUNTY OF LANCASTER,

WITH OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT: BEING A PRACTICAL DETAIL OF THE PECULIARITIES OF THE COUNTY, AND THEIR ADVANTAGES OR DISADVANTAGES DULY CONSIDERED.

WRITTEN FOR THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND, 1849.

TOGETHER WITH AN APPENDIX, CONTAINING REPORTS OF CROPS, CULTIVATION, GENERAL IMPROVEMENTS, &c., FOR 1849; AND OTHER SUBSIDIARY REMARKS.

BY WILLIAM ROTHWELL,

WINWICK,

LAND AGENT, SURVEYOR, AND VALUER.

"Ye generous Britons, venerate the Plough;
And o'er your hills, and long with-drawing vales,
Let Autumn spread his treasures to the sun."

THOMSON.

1850.

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PREFACE.

In publishing this report of the Agriculture of Lancashire, I have no wish whatever to undervalue the merits of the Gentleman to whom the prize was awarded. I have been induced to do so by the repeated desire of several friends, and, from what I imagine, not having had *quite fair play* at the fountain head. It will be seen by the following letter, that my report was disqualified, for competition, by being received too late.

London, April 23rd, 1849.

Sir.

"It is only this morning, on being informed of the motto of your Essay, that I find the one to which you referred in your previous letter. You will perceive that the Essay in question, and which I now send you postage free, was disqualified by the rules of the society in consequence of its reaching our office a week too late for competition.

I also enclose your sealed motto paper unopened.

I am yours, &c.,

JAMES HUDSON, Secretary."

Mr. W. Rothwell, Winwick.

Now, I had no desire for the rules of the society to be infringed upon for my pleasure, without a good and sufficient reason; and what I have to complain of is, that when my report was received, the secretary knew whether it *would*, or *would not*, be allowed to compete. *If not*, it was his duty to open my letter, to get my address, and immediately return the report to me. Instead of this, I had to write twice before I could get it returned; and the secretary is aware that, some years ago, I sent three Essays, to compete for prizes which have *never yet been awarded*. I have repeatedly applied for the manuscripts to be returned, and at last was told that they were lost, or in the hands of members. I have no copy of any of those essays, and would give something for their return. From what I have noticed, and likewise friends who were acquainted with the Essays before transmission, I have great reason to suspect that some portions have not been made an honest use of.

Three weeks before I sent my report, I wrote to the secretary, without giving my name and address, saying, that he would receive *a report* about seven days later than was allowed by the rules of competition, and giving

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a reason for its so being behind time, which I thought would be sufficient, (a hurt in my leg, which prevented me from travelling for some time.) However, I do not complain so much of this, as of its not being returned immediately on its being disqualified.

Had my report been *allowed to compete, and been unsuccessful*, I do not think I should have published it; but, as it is, I think I am justified in doing so. However, after all, from a press of business in my profession, I had given it up, until lately, when, by desire, and being a little more at leisure, I have again engaged it. Now, when in print, I can see faults in its arrangement and style, that I did not notice in the manuscript; and if it must be judged by the purity of its language, or the elegance of its phraseology, it will stand a poor chance. I pretend to little learning, except that of a knowledge of my profession; together with the art of improving and cultivating the land, and the breeding and rearing of stock. The Gentleman who has had the honour of having the prize awarded to him, is far my superior in point of learning; and, so far as I have seen of him, I believe his heart and soul is in the cause of agriculture, using his utmost endeavours to promote its interest and improvement. In practical knowledge, I consider myself his superior; I am perhaps thirty years his senior. I was brought up and matured in the rudiments of Agriculture, and no one ever loved that profession more. The happiest days I ever spent, were when I was a farmer on my own account, never troubling myself with any one's business but my own; and, had I my career to commence again, I would remain a farmer to the end of a chapter. Circumstances called me out to my present profession, (I did not seek it,) and I enjoy it; but there are crosses in it which a farmer who understands his business, and has capital sufficient, never experiences.

Some portions of my remarks have appeared in print before, but they are from my own pen, and derived from my own experience, therefore not improperly inserted.

My report has been revised since returned, with some portions of the original left out, and some additions on a few practical points inserted; but the bulk is as sent for competition. The Appendix is entirely new matter. I have perhaps bestowed too much space on the fourth clause of the instructions; my desire now being to make it a work on practical Agriculture, as well as a report on the farming of Lancashire.

The following is a copy of the instructions to the competitors for this prize; extracted from the prize list of the Royal Agricultural Society of England, for 1849.

"1.—FARMING OF LANCASHIRE.

Fifty Sovereigns will be given for the best report on the Farming of Lancashire.

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v.

Competitors will be expected to describe—

1.—The character of the soils of the county.

2.—The peculiarities, whether advantageous or defective, in its agricultural management.

3.—The improvements effected in the Farming of Lancashire, since the report of R. W. Dickson, in the year 1814.

5.—The improvements still required, whether in higher cultivation, reclamation of waste lands, general or local drainage; or in the condition, including the dwelling, of the farm labourer."

W. ROTHWELL.

WINWICK, *May 1st*, 1850.

ERRATA.

At page 3, in the 7th line from bottom, omit the words "the intelligence."

„ 10, „ 2nd „ top, for "Harwich" read "Horwich"

„ 10, „ 13th „ bottom, for "Halton" read "Halsall."

„ 22, „ 16th „ top, for "*Ruba*" read "*Erica Ruba.*"

„ 37, „ 9th „ top, for "but" read "and"

„ 37, „ 10th „ top, omit the word "previously."

„ 39, „ 12th „ top, after the words "the Wyre" read "the Lune."

„ 42, „ 10th „ bottom, for "after" read "often."

„ 58, „ 14th „ bottom, for "land" read "hand."

„ 60, „ 18th „ bottom, after "Chorlton-cum-Hardy" read "Stretford, Urmston,"

„ 130, „ 17th „ bottom, after "and" read "thatch."

In page 122, the sentence which reads thus, "The crops consist of hay, straw, turnips, and small potatoes, being mostly consumed on the farm by a milk stock, and two working horses," should read, "The hay, straw, turnips, and small potatoes, are mostly consumed on the farm by a milk stock, and two working horses."

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FARMING OF LANCASHIRE.

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The line A.B.C. denotes the imaginary division line, of the mountainous and hilly, from the level or gently undulated districts.

NCE TO THE HUNDREDS.

Lonsdale
Amounderness
Blackburn
Leyland
Salford
West Derby

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REPORT

OF THE

FARMING OF LANCASHIRE.

In writing a report of the present state of the Agriculture of the County of Lancaster, I do not think it necessary to say anything on its situation, or give any particulars with respect to the principal Landowners, these being fully given in the last report. Since then there have been but few changes in proprietory, except in small estates.

At the date of Mr. Dickson's report there existed a considerable number of small proprietors (Yeomen) whose estates had been in the family for generations: some perhaps for centuries, but a great number of these were overwhelmed at the wreck which took place at the close of the late war. High prices led them on to great expenses; and, as is generally the case, ruin was the result. These were a bold, sturdy, moral, independent race of men; and I am quite sure that the morality, the intelligence, and the independence of the present race of farmers, and their laborers, have not improved by their downfall.

One half of Lancashire cannot be considered as possessing any great natural capabilities as an agricultural county, and perhaps no County in England shows a greater diversity as to soils, climate and cultivation. Much as has been said about

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the inferior cultivation of the County of Lancaster, and notwithstanding its imperfections in most districts, it possesses, at the present day, a few of the brightest specimens of Agricultural skill. Within the last thirty years there have been as rapid strides made in the improvement of the Agriculture of this county as in any other county in England, with the exception of Northumberland, Cumberland, and Westmoreland. Good land is very often mistaken for good farming. Where the fields are large and the crops good, great praise is given to the farmer, when the whole merit is due to the natural qualities of the soil, and the salubrity of the climate. There is little land in Lancashire equal to a great portion of the Southern or Midland Counties, whilst the climate is decidedly inferior. In Lancashire the farms, and of course the fields, are small, the fences are generally crooked and old. All these show the county to a disadvantage when compared to the South. Men who are not experienced judges are deceived by appearances, particularly when travelling and not making very minute inspection. I know I have been very often much mistaken in land, crops, and cultivation, when travelling by either Coach or Railway, and should have retained the mistake had I not afterwards walked over the land.

In comparing the farm management of this county, thirty years ago and at present, I have observed a gradual and marked improvement in every branch; and I am also glad to say, in the intelligence of the farmers themselves. Forty years ago drilling and hoeing were unknown amongst us. Potatoes were cultivated in lazy beds, and turnips broadcast. In the weight and in the quality of the former crops, we now excel every other part of Britain. We are also equal to any of the best cultivated districts in the weight of our turnip crops. Forty years ago we had no idea of cleaning our land, but by a summer fallow or hand weeding. Our best farmers now have little recourse to either. The horse and the hand hoe now do the work among the drills, and the land is better prepared before planting or sowing. Forty years ago rotations were little understood, and never practised—except one corn

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crop after another—while little more than two or three times, the seeds were returned. We had then to cut our turnips and other roots for cattle with a knife, by hand, and to wait sometimes several days for a wind before we could separate the corn from the chaff. At that time we had three or four horses in single file at the plough, with a man following the ploughman with a spade to rectify any mistake in the furrow. We seldom now see more than two horses in a plough, although not always with the horses abreast. Forty years ago draining was not extensively practised; it is now rapidly extending on every hand. There is no comparison between our cattle, pigs, horses, and implements at this time and then. The Lancashire milk farmer gets from four to six quarts more milk per day on an average from each cow.

The observations made in this report, are all from practical experience of my own, combined with information received from the most intelligent portion of the Agriculturists of this county.

Without any more prefatory remarks, I shall now beg leave to give, in detail, a somewhat strict account of the various divisions of the county, with regard to soil, climate, and cultivation.

DIVISIONS OF THE COUNTY.

There are two political divisions, North Lancashire and South Lancashire, each of which sends two members to Parliament.

There are six Hundreds, namely:—1st, Lonsdale, which is the most northern part of the county, and in which the county town stands. This hundred is in two distinct parts, which at flood tide are entirely separated by the sea.

2nd, Amounderness, lies to the south of Lonsdale, and is bounded on the south by the River Ribble. This hundred contains the greatest part of the district called the Fylde.

3rd, Blackburn hundred, lying east of Amounderness.

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4th, Leyland, south-west of Blackburn hundred.

5th, Salford hundred, which contains the south-eastern part of the county.

And 6th, West Derby hundred, containing the south-western part of the county.

FURNESS.

That portion of Lancashire called Furness, being the northern part of Lonsdale hundred, is completely isolated by the sea from the remainder of the county.

The face of the country, the nature of the soil, and the customs and manners of the inhabitants are quite different to the rest of the county. An Inhabitant of South Lancashire could scarcely believe he was in the same county.

Under these circumstances, I shall endeavour to give an outline of its various soils and methods of cultivation and improvements effected separately.

Low Furness is in the south of this district, and is quite an agricultural district, but is very much undulated. The soil here is generally a good friable loam. Some on the western coast, about Barrow, a strong clay soil. Some parts of Low Furness lie on limestone. In the neighbourhood of Dalton great quantities of iron ore is got. The land here is excellent, and fit for any crop.

In February, 1849, when I was there, 1,000 single horse cart loads of ore were delivered daily at the Railway, at Dalton, or into vessels on the coast. The latter took it into Wales to be smelted. A great extent of Low Furness belongs to the Earl of Burlington. The farms are generally of good size, some very large, and the land mostly arable. Some years ago the farmers were bound to keep the land down in grass for four or five years in every rotation. Now they have shorter courses, and consequently less time in grass. The result is, the crops are not so heavy. Turnips compose the principal green or fallow crop on the friable soils, being generally carted off the land, to be consumed in the stall, by cattle. Some rape is grown for ewes in the spring. After

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turnips, wheat or barley is sown, then clover; thus, 1st oats, 2nd turnips, 3rd wheat or barley, 4th clover, 5th pasture. The land seldom lies more than two years now, and some only one year. Except near the rivers or brooks, there is but little old meadow or pasture land. The cattle are for the greater part of the short horned breed, and cheese-making, breeding, and grazing, are combined on many of the farms. Most of the calves are reared. The sheep stock are chiefley of the Leicester breed, and many of the large farmers keep a few. On the strong soils beans are introduced frequently in the rotation, either as a fallow crop, or as an intervening crop.

Shallow draining (18 to 24 in.) was common until lately. Mr. Jackson, of Sowerby Lodge, was the first to introduce *deeper drains*, and a better effect has been produced by it. He regulates the depth according to circumstances, which is the only proper method.

The holdings in Low Furness are very much intermixed, similar to some parts of the Fylde district. This is exceedingly inconvenient and makes the farms of far less value. Many farms would be worth ten shillings per acre more rent, if the land all lay together, with the steadings in the centre. The farm houses, outbuildings, and labourers' cottages generally, are not of the best construction for convenience and comfort. The following are a few of the best farmers in Low Furness:—Mr. Patterson, of Hol-beck, near Dalton; Mr. Jackson, Sowerby Lodge; Mr. Ashburn, Gleason Park; Mr. Thomas Coward, Colts Park, near Bardsea; Mr. John Coward, Ramside; Mr. George Colten, Dundren; Mr. James Colten, Hamsford Dale; and Mr. James Robinson, near Ulverston. The western part is the worst cultivated, and is an inferior description of soil, but not so hilly or undulated as the remaining part. Summer fallowing for wheat is practised on the worst soils, the seed being sown in September.

High Furness, which will probably extend to about seven-eights of the whole district, may be said to form a portion of the highlands of England. The whole country consists of lakes, woods, moors, and mountains, with various valleys

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intervening. The mountains and moors are sound hard sheep pasture, and are stocked with a small mountain breed, much like the Welch mountain sheep. From 8 to 12 lbs. per quarter when fat, will be the common weights. The mutton is excellent. The very narrow valleys are chiefly in pasture or meadow, but where there is a greater breadth of valley, or where it is not very hilly, the land is under the convertable system of 1st oats, 2nd potatoes or turnips, 3rd wheat or barley, 4th clover, 5th pasture, 6th pasture.

On some farms one or two more years are allowed in pasture before it is ploughed up again. Farmers here use a considerable quantity of lime, which sells at about ten shillings per ton at the kiln. They make cheese, and breed cattle and horses. There is plenty of fine pure water, and good air; and the people in this mountain district look healthful, cheerful, and good tempered. In this part of Furness there are thousands of acres of spring woods, which consist principally of oak, the common ash, mountain ash, birch, hazel, and elm. These spring woods are cut once in fifteen years, and the produce sells, on the ground, uncut, at from five pounds to twenty-five pounds per acre. The purchasers are bound to have it cut, excepting the oak, by the first of April. They divide it for various purposes, the ash into brush, pitch-fork, and rake handles; some into garths, some spade and fork shafts; some into basket wood, and some into bobbins; all the refuse being afterwards made into charcoal. Birch brooms are also made here extensively. On some parts of the mountain there is copper ore got, and on others, blue slate. I counted above a dozen Tanneries in one day, but most of them were at a stand. In the valleys cattle are mostly short horned, but not generally of first rate quality. The farmers say the old long-horns did better for them. The welch breed, I think, would be the most profitable. In the valleys rent is from ten to thirty shillings per acre, the mountain land being considered worth on an average, one shilling per acre. Poor rates 1s. 6d. in the pound; labourers' wages from 1s. 9d. to 2s. 6d. per day; hired men-servants, from fifteen to twenty pounds a year. A

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considerable portion of this part of Furness was, twenty or thirty years ago, occupied by the owners, copyholders, or other tenures, peculiar to the country. The Duke of Buccleuch is the Lord of the Manor of a great portion, and, when the landholder died, the Lord of the Manor claimed two of the most valuable articles on the farm, whether of live or dead stock. In other instances these were claimed both at the death of the landholder, and also at the death of the Lord of the Manor. Besides this there is a small annual payment of a few shillings, and in some instances twenty times the amount of this payment was claimed at the death of the holder of the land.

Farm buildings are very bad, inconvenient, and crowded together. Farm houses little better. The barns are generally over the shippons, stables, &c.; which when conveniently built to a hill side, a loaded cart can be drawn into the barn above. Light single horse carts, and small half-bred horses are used.

Around Cartmell the land is excellent, and under fair cultivation; the principal rotation is 1st oats, 2nd turnips or potatoes, 3rd barley or wheat, 4th clover; some allow it to lie pasture two or three years; others do not. There is but little old grass.

Cartmell fell, a very extensive tract, has been enclosed since last report, and a considerable portion planted; the trees are thriving well. The remainder being mostly of a mossy description, is under arable cultivation generally. When enclosed, it was drained, and had a good dressing of marl, clay, and sand, little or no lime being used. The general rotation now is 1st oats, 2nd turnips or potatoes, 3rd oats, 4th clover; some pasture a year or two. Lying longer in pasture, and stocking with sheep, would be a great improvement. There has also been an enclosure at Broughton, in Furness, which took place about twenty years ago. The land is generally in cultivation, but possesses nothing particular about it. The soil is various, some high and some low lying.

With regard to the main portion of this county, I shall first make two great divisions. Taking a correct map, com-

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mencing at Bolton on the sands, and drawing a line direct to a little west of Harwich; then turning south-east through Bolton-le-moors, to the boundary of the county, near Ashton-under-lyne. This line divides all the inferior soils and the hilly and mountainous parts of the county from the richer soils and level lands.

SOUTH-WESTERN DIVISION.

That part of the county on the south and west of this line, comprises the southern portion of Salford hundred, the whole of West Derby hundred, more than three-fourths of Leyland hundred, three-fourths of Amounderness, and a small portion of Lonsdale hundred. There are no hills in this division, the whole country being level, or gently undulated, and every part fit, or would soon be made fit, for arable cultivation. The soil, with few exceptions, is of fair quality, some very good, easy of cultivation, and capable of growing any description of crops suitable for the climate, which is not indifferent, far less rain falling on this portion of the county than on the east of this line. There are small detached pieces of thin inferior soil within this district, and there are other portions which are exceedingly rich and fertile. There are several considerable portions of moss land—Chat Moss, near Manchester; Rainford and Kirkby Moss, between St. Helen's and Ormskirk; Halton Moss, Tarleton Moss, &c., in the neighbourhood of Southport; and Pilling Moss, in the Fylde; all of which will make very profitable land when brought into cultivation. There are also extensive districts of water-meadow land in this division of the county, some portion of which lies on the banks of the Mersey, in various parts, and on the Sankey Brook, from near Warrington to St. Helen's; but the principal portion is in the district of Sefton and Altcar, on the banks of the River Alt; also on the River Douglas, from Wigan to its mouth, where it joins the Ribble. With these exceptions the soil of the district comprised within the boundary of this imaginary line, may be divided as follows:—The southern part of Salford hundred, and all the southern and western

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parts of West Derby, comprising about one-half of that hundred; a small portion of Leyland hundred, about one-fourth of the western part of Amounderness hundred, and that portion of Lonsdale hundred lying to Morecambe Bay, is composed of a good friable loam, a good sandy loam, and light sandy land: all being well adapted for the potato, turnip, and mangel wurzel crops. The large tracts of moss land lie between this light land and the strong heavy soils in the interior. The remaining part of this division lying west and south of the imaginary line, both north and south of the Ribble, is composed partly of a strong friable loam, resting on red sandstone, limestone, sand, or gravel; but generally a strong clay loam, resting upon clay or marl, with some portions a stiff clay soil.

Greatly as the soil of this division of the county is diversified, its cultivation is as much or more various; even on the same descriptions of soil, the difference of management between one district, or even one farm from another, is such, that no one unacquainted with its peculiarities could imagine. Under these circumstances it is extremely difficult to make a very minute report of its agriculture, but I will endeavour to point out some of its principal features. I shall in the first place give a general outline of what may be considered the good and bad cultivated districts; and in this it must be remembered that there are exceptions to all these generalities, there being even in the worst cultivated districts some portions under a superior style of management, and in many of the best districts, some of a contrary nature. The soil and cultivation of the north-eastern portion of Salford hundred lying in this division is various. The principal produce is milk and butter, for the supply of Manchester; there being some portions however under arable cultivation. The management on the eastern side of Manchester is generally inferior to what it is on the northern side; which may in some measure be accounted for by the fact of its being a heavier description of soil. Some parts to the north of Manchester are under very superior management, particularly the meadow

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land. In that portion of this division of the county containing the southern side of Salford hundred, and the south-east part of West Derby hundred, the soil being a sandy or peaty loam, with also a considerable extent of moss land; the cultivation is tolerably fair, and for the greater part arable, with a considerable extent occupied as market gardens or garden farms, for the supply of the principal towns with vegetables.

The best district for arable cultivation in this division of the county, is the western and south western side of West Derby hundred, where the land is generally under the convertable system; the soil being principally a good sandy loam, and in some parts peaty. Potato cultivation is extensively followed, principally in three feet drills, and in general are kept very clean and neat. The cultivation of the carrot is extending considerably in a few neighbourhoods with much success.

Farm Buildings in this district are, generally speaking, good, more particularly on the Sefton estate; the fences are straight and in good order. Fields and farms here are generally larger than in most other districts. For the best soils, rents from 40s. to 80s. per acre. Tithe rents from 3s. 6d. to 4s. per acre. Rates from 2s. to 2s. 6d. in the pound.

For the cultivated moss land the rent is from 20s. to 30s. per acre. Tithe rent from 2s. to 2s. 6d. per acre. The Liverpool and Leeds Canal runs through a part of this district, which adds greatly to the value of the land.

With regard to the north eastern side of West Derby hundred, together with the north-west portion of Salford hundred, lying in this division, the cultivation is decidedly inferior, although great improvements have already begun to manifest themselves. About one-half under arable cultivation, and principally very bad management, particularly on the heavier soils. The fields in general are small, with fences crooked and bad; farm buildings likewise inferior and inconvenient. The soil is various, there being considerable portions of wet clay loam, and some parts of wet uncultivated moss, inter-

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mixed with small portions of sandy loam. For the best soils, and in the best situations, the rents are from 40s. to 60s. per acre, and for the inferior ones from 15s. to 30s. per acre. Tithe rents from 2s. to 2s. 6d. per acre; and rates from 2s. to 2s. 6d. in the pound.

The cultivation of Leyland hundred is generally of an inferior description, fences and buildings mostly in a bad state, and land in some parts very wet. On the southern portion, in the neighbourhood of Rufford, Bretherton, to Much Hoole, the land is good. A considerable extent of superior marsh land lies on the River Douglas, and there is also a large portion of cultivated moss land in the neighbourhood, most of which has been in cultivation forty years or more.

On the northern portion of this hundred, the soil is generally a strong clay loam, and mostly in grass. The fields and farms small, with crooked fences. The farmers keep dairy stocks, some make cheese, and others send their milk to Preston. Rents from 20s. to 50s. per acre, and rates about 2s. 6d. in the pound.

The Moss land mentioned above is all under arable cultivation, and lets at from 30s. to 50s. per acre. When first brought into cultivation, it let at from 5s. to 10s. per acre for seven years, the tenant draining it. When first drained and broke up it was covered with marl, clay, or sand. The moss is from twelve to twenty feet deep. It has been drained two feet deep and eight yards asunder, with turf wedge drains, which I consider are too shallow.

Fine wood around Penwortham Lodge, and the situation very beautiful, on a bend of the Ribble, the Church being buried in trees.

From Penwortham to Preston, good land and principally in grass. Walton Flats consists of fine rich deep alluvial land, all in grass, and worth from 70s. to 100s. per acre. It is subject to be overflowed by the Ribble, sometimes to the depth of several feet.

The southern portion of Amounderness hundred is a very

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strong clay loam, with the exception of small portions of peaty and sandy land. There is also some good water meadow near Kirkham. This portion of country, with the exception of the neighbourhood of Lytham, and a few individual farmers, is but indifferently cultivated, and chiefly requires draining. The fences are bad and crooked, fields small, and the arable land not well cleaned. Rents 25s. to 50s. per acre. Tithe rent charge 3s. to 4s. per acre. Rates about 2s. in the pound.

In the northern parts of this hundred there are some portions of sand and sandy loams, with a considerable extent of moss land. The remainder is a good strong clay loam, a great extent of which also requires draining. On the sandy loams the farming is much improved, but the cultivation of the clay loam is conducted in the real old style, viz. fallowing, ploughing with four horses in length, laying down land without seeds, &c. In the neighbourhood of Garstang, the land is mostly in grass, and in various states of cultivation. Excellent land on the River Wyre, being principally in old pasture and meadow.

In that portion of Lonsdale hundred in this imaginary division of the county, the cultivation is generally good. Land is excellent, some portions being on a limestone foundation, and fences are straight and in good order. The Duke of Hamilton has made great improvements by draining, planting new fences, eradicating old ones, enlarging the fields, and increasing the conveniences of farm steadings.

NORTH-EASTERN DIVISION.

That portion of the county, lying east of this imaginary line is very much diversified as to soil, subsoil, elevation, exposure, and climate. There are some high mountainous districts, with extensive moors and wastes. The greatest part is very much undulated, and on this account, combined with diversity of the soil, is not so fit for arable cultivation. It is well watered by rivers, rivulets, and brooks, and rather too well watered from the clouds, which distribute their contents

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when too heavily laden, to pass over the mountains into Yorkshire.

The soil of this district consists of every description, from the most barren heath or peaty soil, to the richest loam; limestone or alluvian lying on the banks of the rivers and brooks. There are as delightful valleys, cozy nooks and corners, as any I have witnessed in England, Scotland, or Ireland, whether as regards wood, water, mountain, or valley, composing scenery of the most romantic and picturesque description. Within the southern part of this district are situate the principal localities or seats of manufactures. Some of the valleys to the south of the Ribble swarm with an industrious and intelligent population, and scarcely a spring emerges from the mountain side, or a stream flows along its channel, but what is turned to some service in the furtherance of manufacturing operations.

The richest soils lie on the banks of the Lune, the Wyre, and the Ribble, to Ribchester, Whalley, and Clitheroe; also good land around Burnley, and up the valley to Todmorden.

Townley Park, situated near to Burnley, is composed of fine land, and there is also some very good land on the banks of the Irwell and the Roach, up to their source. In the hollows and on the tops of the moors, there is generally deep peat bog, which makes good fireing.

There are considerable districts in this division of strong clay land, resting on a stiff clay, with scarcely any porous substance between the soil and subsoil. This land is difficult to drain perfectly, and is not pleasant or desirable land for arable cultivation; notwithstanding this, it is profitable under first rate management, but requires great vigilance and perseverance. The firmness of the soil enables it to carry a greater weight of grain, pulse, or clover, than other soils, before the crops are lodged by heavy showers, and previous to their being ripe or cut. When land of this description is run out by over cropping and neglect, it requires a considerable number of years to get it into a proper condition again. When once put in a high state of cultivation, it requires less manure

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to keep it in that position than most other soils, excepting the richest loams, and alluvial soils. There are also in this division some districts of poor, worthless clay soils, resting on a nasty yellow or blue adhesive clay. This kind of land lies generally on the slopes of hills, or the tops of elevated ridges. It is exceedingly difficult to drain, and quite as difficult to cultivate, and for arable purposes it is unprofitable.

There are some portions of limestone land in this division. One portion of which lies on the northern part of Blackburn hundred, from Whalley to above Clitheroe; and from the banks of the Ribble to Pendle Hill. Another portion lies on the northern part of the southern division of Lonsdale hundred, being that district which lies north of the Lune from Lancaster, to the boundary of Westmoreland, at Burton, Dalton, Whittington, and Kirby Lonsdale.

This description of soil, having a considerable portion of calcareous earth in its composition, and also generally resting on limestone rock, is a happy description of soil to the cultivator and owner. Grain crops prove better under the thrasher, from the same quantity of straw than farmers of almost any other description of soil would expect. It is the same with the cattle when they come to the butcher, or in the weight of the butter or cheese from the dairy, and in the quality of the potatoe at the dinner table.

The county is so diversified in its form, and in the nature and quality of its soil, that it would be difficult to give a particular description of all the various modes of farming. There is land of every value, from 3d. per acre to £5, or perhaps upwards.

There are considerable portions, in some districts, under arable cultivation; and in general the same modes of farming are practised in this division of the county as are practised on the same description of soils in the other division; except from the high situation, or unevenness of the surface, they could not be carried out with any chance of success.

Those parts of this division which are enclosed, but unprofitable for arable cultivation, are mostly occupied with

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dairy and breeding stocks; the unenclosed land with sheep. Grass land cultivation is carried on to greater perfection in some parts of this division than in the other; particularly to the north of Manchester, for the distance of twelve or fifteen miles. Dairying is the principal system adopted, and it being a thickly populated district, a ready market is found for milk and butter. Meadow land is in general kept in a high state of cultivation, and in some of the valleys is remarkably early and productive. Three examples of superior arable cultivation are given in another place, which reside in this division, and in the district above mentioned. I could also give numerous examples of successful grass cultivators. One I will give, because it will show what can be done under very unfavourable circumstances, and by a woman too, one who never had the luck to get married. Her good management did not extend to the pasture land, but solely to the meadow land. This was her god, and she was unremitting in her attentions to it; because it enabled her to carry her milk cows through many a bitter winter. Her farm is in a very high situation, being upwards of 1,000 feet above the level of the sea. The soil of fair quality, but of no great depth. She frequently cut three heavy crops from it in a year, but never less than two very superior ones. I will venture to say, she never got less than five or six tons of hay per acre from it in any season. She generally cut the first crop in the last week of May, but never later than the first week in June; and if she cut it three times, the last was in September. She gave it a good coat of cow dung immediately after the last cutting every year, and the urine was applied between each cutting, and in winter as it accumulated. She also frequently gave it a little lime, which made the hay of superior quality. She has now gone to the other world at the advanced age of near ninety, and until within a few years of her death, Betty Lord could be seen every morning through winter and summer, whether there were frost, snow, hail, rain, or wind, driving the produce of her dairy a distance of four miles, to the village of Heywood, where she arrived a little before 8 o'clock, as regularly, or

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more so, than Her Majesty's mail arrived at the same place. Her residence was at Wolstenholm, in the township of Spotland, near Rochdale.

The finest, and decidedly the best land in the county, is in Lonsdale hundred. From a little south of Lancaster to Burton, on the boundary of Westmoreland, is a tract of good healthy, friable loam, resting mostly on limestone; it is prettily undulated, but not too much for arable cultivation. In the vale of the Lune, the Wenning, and other vales and holmes, the soil is a deep rich alluvial, and in some parts the scenery is exceedingly rich and beautiful. Luxuriant woods, murmuring brooks, narrow dells, and roaring torrents, combined with the rich verdure of vegetation in general, give the scenery a truly sublime and romantic appearance. Some of the most barren rocky hills and mountains are also situated within this hundred. Rent in the vales and holmes, from 40s. to 70s. or 80s. per acre. More elevated arable land from 15s. to 40s.

The farming in this part is nothing particular, it being best around Lancaster, and on the north road to Burton, and in the vale of the Lune. A considerable portion under arable cultivation, which I consider to be under better management than the grass land. Quernmore Park estate has been much improved by its late owner, Charles Gibson, Esq., and no doubt its present owner, William Garnett, Esq., has and will still make further improvements. Richard Hinde, Esq. has considerably improved by draining, subsoiling, and cultivating a piece of poor land at Ellelmoor, and has obtained very good crops of both corn and roots from it.

That district between the vales of the Lune and Ribble, lying to the eastern boundary of the county, being principally high and moorish, little more need be said with regard to its features. What is in cultivation is generally in an indifferent state, and not being a manufacturing locality, land is of very little value. The highest land is occupied as sheep walks, and the lower districts in the rearing and grazing of both sheep and cattle, principally the latter, also in raising dairy

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produce. The country stretching back from the valley of the Ribble on both sides, as far as the conflux with the Calder, the valley itself consisting of strong alluvial, is of a rather light description of soil, resting on clay, between which and the surface soil, a bed of grey sand of from eight to twelve inches thick intervenes. From Whalley to Clitheroe the soil is deeper, and being as before stated, on a limestone foundation, though somewhat heavy, yet tolerably dry.

In the district from Todmorden towards Burnley, the soil on the hills and hill sides, is light and thin; and the district stretching on to Colne for a few miles in extent, is of a poor heavy wet soil, extending also west to within about two or three miles of Clitheroe. The district around Clitheroe, Colne, Burnley, and Whalley, is gently undulated, and from Whalley to Preston, it is principally flat. The whole of this district, with the exception of the limestone tract before mentioned, is wet; no improvements in progress, the necessity of draining being admitted but not practised, excepting a few cases; and very little limeing done, it not being liked on the heavy soils. It is chiefly all in grass, individual fields only being ploughed for oats, and small patches for potatoes. It is divided into farms of from six to fifty acres, there being few instances of farms extending to one hundred acres, only what are occupied by the great landed proprietors. The principal produce is milk and butter, a few sheep being kept in some instances. A large extent of the land is in pasture, about one fourth or one third of the farm being mown for winter keep, on which all the manure that is made is applied. What arable cultivation there is, it is generally very bad; merely sowing oats upon one furrow after grass, and then allowed to lie again to grass over without any more culture or sowing of seeds.

The locality comprising the heavier description of soils, is the principal portion of that part of Salford hundred as shown in this division, together with the southern part of Blackburn hundred.

This district may be considered as the most difficult of management of any in the county; its elevation on the plains

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may be calculated at about five or six hundred feet above the level of the sea, and the summer season is generally from six weeks to two months shorter than in the south-western part of the county, besides being continually deluged with a super-abundance of rain. A chain of hills runs through the centre of the district, branching from the main range at Todmorden, and terminating at Horwich, a little to the north-west of Bolton-le-moors, the town of Haslingden situated in this range being the highest market town in the kingdom. In this circuit there is a large population, and land, though in backward situations, is generally of great value. The district appertaining to the range of hills before mentioned, extending to Blackburn and Burnley on the north, and Bolton, Bury, and Rochdale on the south, also along the eastern side down as far as Ashton-under-lyne for a few miles in extent, is principally occupied as small dairy farms, there being a great demand for milk and butter; and not much adapted, from the nature of its soil and climate, for arable cultivation. The aspect of this range of country is bleak and sterile, vegetation having a stunted appearance from its great exposure; with the exception of the valleys and other sheltered situations, which in some instances are extremely romantic.

The district surrounding Bury and extending towards Manchester, having a more undulating surface, with a soil and climate of a rather superior nature, arable cultivation is carried on with tolerable success, but still the principal product is milk and butter. The management of this locality may be considered of a superior order, grass land particularly so; and the general aspect of the country has a pleasing, and in some instances, a picturesque appearance.

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CULTIVATION OF THE DIFFERENT SOILS.

Under this head, I shall describe the cultivation of each variety of soil in the following order. 1st, mountains and moors; 2nd, wastes and commons; 3rd, deep mosses; 4th, peaty soils in cultivation; 5th, sandy land; 6th, sandy loams; 7th, strong rich friable loams, including limestone land; 8th, holme, valley, and alluvial land; 9th, clay; and 10th, clay loams.

1.—MOUNTAINS AND MOORS.

The mountains are, I think, without any exception, in the same state which nature has left them; and no attempt has, that I am aware of, been made to improve them. I shall however point out what in my opinion might be done, and the return pay a proper per centage for the outlay, besides embellishing the country, and perhaps improving the climate.

Where the soil is wet I would recommend open drains, or covered ones as circumstances pointed out, which were the best and cheapest; this, in some measure, would depend on the materials for close or covered drains, being found on the part to be drained. Generally in such situations there are plenty. Then the water from the drains, or from any spring, or rivulet of water, should be conveyed to irrigate patches of the mountain side below. Wherever there was a depth of three inches of soil, and where it was naturally dry, or made so by draining, I should recommend lime or bone manure, spread on the surface. Either of these will destroy the heath plants, and cause sweet herbage to rise in their place. Some parts of most mountains in this county would answer to plant with Alpine forest trees, if the plants were properly prepared and planted whilst small.

Plantations thus made would pay the planter or his successor, and would afford shelter for the sheep or cattle grazing on the mountains, besides adding to the beauty of the landscape.

All the sheltered parts of a mountain where there is sufficient soil, should be fenced off from the more exposed parts,

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so as to preserve them against stormy, cold, or wet days; the stock being confined to the exposed parts in fine weather.

On the moory parts of this county there have been some improvements made since the date of last report, by enclosing, draining, limeing, and marling. Sir Robert Peel has improved some of the moor land attached to his estate in the township of Oswaldtwistle, near Blackburn, and several gentlemen who own property in the same neighbourhood, and around Haslingden, have done the same. But even here there yet remains plenty of room for exertion, and in the laying out of spare capital, with a certainty of a fair return if judiciously attended to. The general method adopted here has been to enclose and drain, and then spread lime on the surface; and in some cases both lime and marl. In a few years that beautiful plant, in the summer and autumn,) the *Erica Vulgaris*, *Ruba*, and those sweet smelling ones, the Bog Myrtle, *(Myrica Gale,)* and Lancashire Aspodel, *(Authericum osse fragum)* die away, and better herbage springs up in their place.*

Improvements of the same nature have been made on Horwich moor and Turton, also on the moors to the eastern boundary, in north Lancashire, lying to Yorkshire. A considerable extent of moor land has been enclosed in going from Burton to Kirby Lonsdale, *via* Dalton, Whittington, &c., on the Westmoreland boundary; and also towards the Lune. The extent of moor land enclosed in these districts is very considerable, and in some parts a great portion is in arable cultivation, but I feel quite certain without profit. The work of fencing and cultivating has generally been badly executed. Stone walls for instance, indifferently put together, has been the mode of fencing; penny wisdom, in fact, exhibits itself everywhere. A very great extent has never been drained at all, and that which has been done has proved to be of little

* John Hoyle, Esq., of Haslingden, is the most successful cultivator of waste or moor land; he being a real practical man, superintending the work himself, and thereby doing it effectually, and with judgment. He has also the best farm steading in that district.

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use. Proper fencing, and in some situations, planting, good draining, and a sufficient dressing of lime or bone manure, would make a great portion of it good pasture land; and some of the flat, sheltered, or mossy parts, would make excellent meadow, which might be irrigated at a slight expense. With the exception of intermediate fields adapted for arable cultivation, the whole of these newly enclosed moors would pay double rents in permanent grass, if under proper management, and put in a good state of cultivation. This work would pay more per centage, and be more certain than if under arable cultivation. In improving these high moors, stone walls have been the general fences adopted. I should recommend however, a cop raised eighteen inches above the surface of the land, and three feet broad at the top, having a quantity of lime, with night soil and ashes or guano mixed with the soil on the top of the cop; upon this hollies or whins might be planted. These will thrive in very high situations, and are excellent shelter either in winter or summer. By adopting the above plan, they will make a good fence if kept clean, well protected, and properly trimmed for a few years.

I consider that the cheapest and the easiest way of improving such land, is, after being drained, (where it is required) to spread the lime or bone manure on the surface; and better still, if a coat of marl, clay, or sand were applied before the lime, &c. Some improvers neglect the draining, but this seldom answers a good purpose.

2.—WASTES AND COMMONS.

On this description of land there has been a considerable extent brought into arable cultivation, some portions being in grass, and others planted with forest trees. This class of land is generally on the same level as the surrounding land previously in cultivation, consequently, will pay the cultivator by cropping with grain or roots. The soil of these wastes and commons generally rests on clay or sand, often at no great distance from the surface.

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The mode adopted in their improvement has been to fence with white thorn. Some cultivators have also drained where required, whilst others have not, and in these latter cases I question whether the crops produced have repaid the expenses. Breaking up the land after enclosing has been the universal mode adopted, and continued under the plough for several years, then put under the same course of cropping, or allowed to remain in grass similar to the surrounding land.

Siddal moor, near Heywood, has been enclosed and improved. One part, purchased by Mr. John Owen, of Prestwich, has been done in a perfect manner. Other parts not so well managed. Cockey moor, lying between Bury and Bolton, and belonging to the Earl of Wilton, has been trenched eighteen inches deep, and planted with forest trees, which are now doing well. Bolton moor and Dean moor are enclosed and improved, some parts well, and others very indifferently.

There are various other low lying commons and waste lands in different parts of the county that have been enclosed and improved, but which are not very extensive; and few have been done with spirit, being little more than half cultivated, and leaving but a small profit to the cultivator.

The best way of bringing such land into a genuine state of cultivation, is first to drain effectually where it is required; then to fence substantially by planting white thorn fences on cops or banks, say eighteen inches above the surface, and three feet broad at the top, which should be left a little hollow in the centre, where the quicks are to be planted. I prefer this to the scotch method of planting thorn fences. By the cop being raised above the surface there would be a greater depth of soil under the thorn quicks, and, consequently, the fence sooner propogated. A little night soil and ashes, also lime or marl should be applied to them at the first onset; the land should then be trenched twelve inches deep, afterwards marl, lime, or bone manure applied to the surface. It is then prepared for laying down to permanent grass, or cropping with root, or corn crops in rotation. All the outside fences of the common or waste, or to any road across it, must be well

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protected by rails and posts. The interior fences do not require this if the land be put under arable crops for four or five years at first, but if sown down to grass, these will also demand the same protection.

3.—DEEP MOSSES.

"The celebrated Chat moss, situate in the hundred of Salford, in the southern division of this county, lies at an altitude of about one hundred feet above the level of the sea. The strata on which it rests are of various character, some sandy, lying towards its centre, and on the south we find a red coloured marl; to the north and north-west we find clay and a blue coloured marl; the last named contains carbonate of lime in greater proportion than the yellow or red marl. At a considerable distance on the bog we find grey sand within eight or eleven feet of the surface."

The Earl of Ellesmere, of Worsley, and Colonel Ross, of Astley, have each commenced draining their portions of Chat moss, having both recently planted a considerable extent of the newly drained parts with birch, scotch, spruce, and larch firs. This has been done without trenching or turning down the ling or heath, or applying any manure, marl, or lime. It would have paid them double had they not neglected those operations. When there is depth of soil, forest trees make more than three times the progress on *trenched* than on *untrenched* land, providing it be not too deeply trenched. From twelve to fifteen inches would be better than if deeper.

Considerable improvement has been made in this moss since the date of last report, still I think little more than one third is as yet in cultivation, and some part of this very indifferently done. That part which has been cultivated by the late Mr. Baines, of the "Leeds Mercury," and Messrs. Evans and Co., under the management of Mr. Bell, has been effected in a superior manner. Various other gentlemen have also cultivated a part in the same style. These parts are kept in a regular state of cultivation, and produce heavy crops of grain,

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roots, and clover. Some who have commenced the cultivation of portions have entirely failed from the want of proper knowledge and capital. Others have half improved their lots, having drained and trenched, but not followed up with marl or lime, and with little manure. The consequence is, their crops are light and their purses the same.

The rotation adopted on Mr. Baines' farm is wheat after turnips, then oats, sown with clover and grass seeds. It is then allowed to lie two years, being mown four times during that period, covering with compost the second year; and in five years sixty tons of Manchester small manure are applied to the acre. The turnip crop is estimated at fifteen tons per acre, and the wheat crop at from thirty to thirty-six bushels. Belts of forest trees have been planted between the fields, with thorn hedges, on part of this moss; and some which were planted ten or twelve years ago have now a most beautiful appearance, when contrasted with the bleak and barren parts.

Paring and burning was some years since tried on this moss, but the practise is now almost abandoned. Lime is used but sparingly, the same with bones; night soil and ashes having proved the most invigorating for every crop.

One part of White moss, near Middleton, to the extent of nearly two hundred acres has been improved, under the superintendence of Mr. James Dixon, now Agent to Robert Gregge Hopwood, Esq., of Hopwood. This part of White moss has been purchased, or leased, by Messrs. Gould and Jones, at whose expense it has been brought into cultivation. It now carries excellent crops of corn, clover, and roots, although the climate is far from what is termed good. This moss lies at an altitude of about four hundred feet above the level of the sea. The drainage is perfect, which is not always the case in moss improvements.

The following detail of improvements made upon this moss is from information furnished by Mr. Dixon himself.

"The whole extent improved is divided into fields of from six to eight acres in extent each. The fields are in the form of parallelograms, not more than seventy yards wide, all

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joining up to suitable roads formed for the purpose. The fields are divided by the means of large open drains. The first operation in improving was the cutting of these divisions or main drains, five feet wide, and from two to three feet deep, thus providing suitable outlets for the water. Drains were then opened across the fields from one main to another, being cut twenty inches wide, and twenty four inches deep. The whole extent intended to be improved as a first undertaking, was gone over in the way herein specified; and by the time that all the cross drains were cut, the mains were in a fit condition for being deepened another foot, but in no case should there be any immoderate haste in performing this work, owing to the pulpy state of the surface. It was found the most judicious method to open the drains at different intervals, getting nearly the depth in one season, and completing or covering up such as were to be under drains the season following. The cross drains were cut to the depth of not less than four feet six inches when completed, and the mains as much deeper as the condition of the peat would allow.

The main drains as before observed, were left open, forming a division between each field; cross drains were cut at from five to seven yards distance, laid with sods, and covered up before any attempt was made at further improvement. The mode of cutting these drains was with an implement called a tommy spade. This spade is straight on the shaft, and the operator cuts so that his drain sides are nearly vertical. The surface sod is taken neatly out to the depth of twelve inches, and laid carefully on one side in order to be a covering for the lowermost spit, this being eighteen inches deep, and cut with an implement called a spitting tool; after which the surface was introduced on the spit, and formed what is understood by the term wedge and shoulder drain.

After draining, the surface was broken up, partly with the plough and partly with the spade. In ploughing, to prevent sinking, the horses are provided with wood pattens attached to their feet, made firm by light iron plates, and fastened by means of a bolt. As a further preventive against sinking,

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the horses were not allowed to walk on the ridge, or in the furrow, but on the undisturbed surface. After ploughing, a heavy roller with eight or ten circular knives fastened to its cylinder, was drawn with four or five horses over the land. This instrument cuts the tough peat into small pieces. A large harrow was then employed to effect a further reduction. Marling being the next operation, was done by a portable railway, without which, peat bogs of any extent cannot be by any means cultivated to advantage.

The waggons and other machinery required to complete one mile of this sort of railway will cost about £400, and when laid down on a tolerably level line, one horse will draw upon it from three to four tons. Sand was used in connexion with marl, in the proportion of one of sand to two of marl, and of the two substances about two hundred cubic yards were applied to the acre. Night soil and coal ashes have been applied as manure, and found to answer much better than others, not only as immediate help to the crops, but also to reduce and decay the live peat to a soil.

To prepare the peat ready for cropping required three ploughings and three harrowings, and twice cutting with the roller; these operations on the average cost about £3 per acre.

In breaking up by the spade, the surface was first turned over with the plough, then spade trenched with the ploughed furrows laid underneath, as the work proceeded. This operation cost from £4 to £4 10s. per acre. The extra outlay in the cultivation by the spade has been found to be amply repaid in the results of the produce, which have been estimated to be from ten to fifteen per cent in favour of that implement.

The following is an estimate of about the average cost of bringing this moss into cultivation, excluding the cost of making roads, &c., viz:—

	£.	s.	d.
Draining, including mains	4	0	0
Marling and sanding two hundred cubic yards	4	10	0

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Manure, night soil, &c., thirty tons....	7	10	0
Trenching.....	4	0	0
	£20	0	0

Some parts of the improved peat were first planted with potatoes, others sown with swedish turnips, common turnips, and mangel wurtzel: all in drills. Oats have been produced on the moss in question, averaging full sixty bushels per acre. Also turnips from twenty-six to thirty-two inches in diameter, and at the rate of about twenty tons per acre."

A railway has been made from the Manchester and Leeds line right on to this moss, by which manure is conveyed from Oldham and Manchester, and the produce from the moss to any market. Being situated in a manufacturing district the greatest part of the produce is sold from the land, consisting of hay, corn, straw, and roots, and manure brought in return. Very little stock is kept on the land besides the working horses.

The rotation adopted after the moss is brought into a regular system of cultivation is 1st oats, after clover; 2nd potatoes or other root crops; 3rd wheat, winter or spring varieties according to the time of sowing, which is sometimes in the early spring months; 4th, clover, cut twice. The detail of the work is as follows:—the clover root is ploughed one furrow in the spring, and the oats sown broadcast and harrowed in, and when the new crop is in the second or third leaf, it is rolled.

After harvest the land is ploughed one furrow deep, and left all winter. The spring following it is cross ploughed, then well harrowed and gone over with the cultivator and harrow alternately at intervals, until the soil is well pulverized, and the weed roots picked out and burnt. The land is then drawn out in twenty-seven inch ridges with a double mould board plough. Dung is then cast upon the land and put in heaps of from one cwt. to one and a half cwts. in each, the heaps being put about six yards asunder in every third drill. It is then spread equally in the furrows and the ridges,

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reversed with the double mould board plough. The mode of management is the same whether for potatoes, turnips, or mangel wurtzel, only the potato sets are laid on the dung before covering up, and the turnip and beet seed are sown above it after it is covered, the ridges being rolled before, and after sowing. Mangel wurzel is sown early in April, afterwards potatoes are planted in that month, and also in May. Swedish turnips are sown from the middle of May to the middle of June. Different varieties of the common turnip are sown, (as soon as time and circumstances will allow) on the remainder of the fallowed land; of course that land on which those crops are sown the latest, receives extra scarifyings and harrowings before sowing.

All these root crops are gone over with the drill cultivator or horse hoes, during the growth of the crop, and the plants thinned and kept clean by hand hoeing and weeding. Potato sets are laid from nine to twelve inches asunder in the drill, and the best turnip plants left at about twelve inches.

As these crops are removed from the land in the autumn or winter, the land is ploughed one furrow if the weather suits, the wheat seed also being sown broadcast and harrowed in. In April following the crop is rolled, then red clover and rye grass sown, and the land bush harrowed and rolled again.

After the wheat is harvested, a top dressing of night soil and ashes is given as soon as the land and weather will permit, or of guano or soot in the spring following.

The quantity of seed oats sown per acre is about five bushels, and of wheat, two and a half bushels.

Pilling moss in the Fylde, which is of considerable extent, has been in reclaiming for the last thirty or forty years, but not in a systematic manner. Individual tenants have cultivated portions in small and separate lots, most convenient to themselves. The drainage has been by open drains from twenty four to thirty inches deep, and from seven to ten yards asunder; the moss being cultivated between each. This is a very inconvenient mode of occupation; but lately, a number of these tenants have begun to make covered drains within three feet

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of the old open ones, filling the old drains up during the operation. These covered drains are from four, to four and a half feet in depth, on the wedge principle where the moss is deep; but where it is less than three feet deep, the drain is cut into the clay and laid with tiles. Very considerable portions of this moss are as yet unreclaimed; large quantities of peat for fireing are got and dried, sixty-four superficial square yards being sold for one shilling, the purchaser cutting and drying, who is also bound to leave a certain depth of moss on the superincumbent clay. Great quantities of potatoes are grown on the cultivated parts of this moss, also turnips, wheat, barley, oats, and clover; and when the management is good, fine crops are obtained. Good management is the exception, not the rule; short manuring, defective cleaning, and no rest by pasturing, are the principal faults.

The cultivation of Rawcliffe moss, which is a continuation of Pilling moss, is carried on in a very systematic manner, so far as belongs to Thomas Robert Wilson Ffrance, Esq. The different departments of labour go on together in a regular course under the superintendence of Mr. Ffrance himself.

Considerable portions of this moss have had the peat taken from it for fireing, leaving little bog earth on the superincumbent subsoil, which is mostly a loamy clay resting on marl, and is, consequently in a very wet state, and completely worthless until drained and cultivated. This goes by the name of Fallow moss. The method taken with these parts of the moss is as follows:—the fields are laid out in the form of rectangles, by opening ditches, which answer for main drains. These are made from six to eight feet wide at the top, one foot at the bottom, and from four to six feet deep, according to the fall which can be got. The cross drains are from three to four feet deep, and from twelve to fourteen feet asunder. They are cut eighteen inches wide at the top, and continue to taper on each side to the width of two inches at the bottom. Spits of peat moss are cut of this form

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and dried into turf, fit for burning. These, when perfectly dry, are put into drains which are cut into the clay, perhaps eighteen inches, and pressed so as to make a perfectly firm covering, thus, leaving an opening at the bottom of one foot high; the land is then clayed or marled, and fit for cropping immediately.

Potatoes are the universal crop first taken from the moss when brought into cultivation.

The raw or head moss, is that part or parts of the moss from which no peat has been got, and requires more time and patience to bring it into a proper state for cropping, owing to its spongy nature. The best plan of improving this flow moss is as follows:—the open ditches or main drains are cut eighteen inches deep, the full width; cross drains are then cut the same depth or nearly so. The year following, the ditches are cut two spits deeper, and the cross drains one spit. The third year, both ditches and cross drains are cut to their full depth, and in the same form as the moss fallows. The cross drains are covered by the raw moss cut in the same form as for the fallow moss drains. The surface is then dug one full spit of twelve inches deep, or trenched to a greater depth. It is then clayed or marled, being conveyed in waggons on moveable railways. The first crop is potatoes, planted in beds or drills, and they are scarcely ever known to be diseased. The crops are likewise heavy if properly manured. For several years, moss farmers have done very well, and there is now very great competition for moss plots or farms.

When I was in that district in February, 1849, I saw some thousands of bushels of good, sound, clean skinned potatoes; at least in those pits which were opened, the tubers appeared in this state. Many hundreds of potato pits were to be seen on the various moss farms.

The raw moss is almost valueless before being cultivated. If the renter undertake to drain or marl, 5s. to 10s. per acre would be the rent for ten years; and for the cultivated moss, from 30s. to 40s. can now be got as rent. This spring, Mr.

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Ffrance has planted perhaps twenty miles of thorn fences on his moss land. These are planted alongside the ditches, about one foot from the edge, and one foot below the surface of the moss.

The Earl of Derby is draining extensively on Rainford and Kirby moss, the whole of which belongs to him. Various portions of it have been partially improved by individual tenants, but very little judiciously or effectually. Portions also have had the moss cut away and made into peats for fuel, used by the farming and cottage tenants, and for sale.

His Lordship has now undertaken the whole drainage himself, and had, in February, 1849, about sixty men employed in its drainage, and on various farms in the neighbourhood, under a superintendent.

That part of the moss land from which peats have been got, the ditches, main, and cross drains are cut into the subsoil, a sort of marly clay. In these drains tiles are laid on slate soles, or with pipe tiles. The ditches, mains, and cross drains are cut about the same depth and at the same distance as at Rawcliffe moss and other mosses. On the head or raw moss, the cross drains are left with a shoulder at one foot from the bottom, thus, the whole being three feet deep, one foot hollow, eighteen inches wide at top, and twelve inches wide above the shoulder. I do not consider this so good a plan as the proper wedge drain, for except the covering spit be made to fit very tight above the shoulder, it will be apt to sink in the middle by pressure from above, and the sides also of the open part more likely to come together, and consequently stop the drain. The draining in other respects seems to be well executed, but the fields are not so well laid out as those upon Rawcliffe, Chat moss, and White moss. There is a fine wide, straight road made from Knowsley Park to Bickerstaff Hall, which runs across the moss, and gives a good opening for the improvement and occupation. The fields or farms should be made to abut upon this road, and all

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the fences or ditches at right angles from it. With a few exceptions, near Mossbury, the cultivation after drainage is not followed up with spirit; the moss is drained but not cultivated.

The work of improvement, after the road was made, should have been begun at one side and progressed forwards, the cultivation following the draining in a regular form. The old ditches made on the half cultivated parts by the tenants, should be filled up, and new ones made at right angles across the moss, both right and left of the great road. Cross ditches should have been cut at certain distances, so as to form large fields in the shape of rectangles, as at Rawcliffe moss, Chat moss, and White moss. I also recommend thorn fences, planted in a few years along one side of every ditch, as at the two former mosses, but not hedge row trees, as at Chat moss.

As the drainage was completed by the ditches, mains, and cross drains ,the moss might have been let to tenants, at a low rent at first, to complete the improvement, binding them to certain conditions so as to insure perfect cultivation; or his Lordship might have trenched and marled, and then let it, as it is seldom profitable for gentlemen to farm extensively themselves.

Mossbury Hall is rather an extensive farm, almost in the centre of the moss. Here the drainage and other improvements are proceeding in a very systematic manner. The fences and fields are laid out in a proper direction, and the cultivation of the different descriptions of crops appears to be very good. If deficient in any respect, it is in not applying a sufficiency of lime ,marl, clay, or sand to the newly reclaimed moss. At this place there is a new house and complete farm steading in building; but the house is costing far *too much money* for a *farm house*, similar to what has been done upon Mr. Clifton's property, which is noticed in another place. An elegant house will produce nothing, and of course there can be no return from it. The extra money spent on these premises at Mossbury, beyond what was necessary for both comfort and convenience, would have completely drained and improved fifty

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acres of moss land, which would have then let for near £100 per year.

The Earl of Stamford and Warrington is about completing extensive improvements on his moss land, near Ashton-under-lyne, but not being acquainted with the detail of the manner of carrying out the work, I cannot furnish any information respecting it. I can merely state, that from a cursory view the appearance is good, and no doubt the improvements are effected in a very substantial manner.

On Halsall moss, near Southport, which is rather extensive, little in the way of improvement has yet been done. There are only a few small plots in cultivation, and those both in drainage and general management, are very imperfect.

There are also portions of unimproved moss land in various districts, and some portions in an half improved state, but they are not extensive. Those parts which are reclaimed chiefly require draining in a more systematic manner; the fields re-modelling, and white thorn hedge rows planting. The occupation roads, which are generally very indifferent, should be improved, or new and better lines made. Very little lime, marl, or sand have been used in these cases in reclaiming, and without a proper application of one or more of these, this work is of little use. All moss land of considerable depth requires new drains making in ten or fourteen years after the first drainage; also, a third time in the same number of years afterwards; because, as the moss decomposes, by cultivation and draining, it sinks rapidly, and thus brings the drains near the surface. The third draining may last several generations, and this I should recommend to be laid with open tiles, on soles, or with pipe tiles. They are then more sure than any wedge drains covered with turf. At the third drainage, the drains will do at a greater distance than at the two first. The expense of the two first drainings is not heavy. These after drainings are generally neglected on most moss improvements, together with not following up with repeated applications of lime, marl, and sand, which are indispensible; also a strict observance to the suppression of weeds, and other minor points of general management.

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On those moss lands that have been in cultivation a considerable period, such as in the neighbourhood of Tartleton, it was the common practice, thirty years ago, to pare and burn every four years, and the land afterwards sown with oats for several years in succession. This is now put a stop to, as when the land was burnt down to the subsoil, it became almost useless. Burning is now never allowed without a written consent from the landowner or agent. The rotation generally adopted is 1st potatoes, 2nd wheat, 3rd oats, 4th clover and ryegrass; being cut twice the year following, and then planted with potatoes again.

It would be a great improvement to this land, to sow all the oats with white clover and other seeds, and pasture two or three years between every rotation with sheep. The Leicester breed would do well upon it when properly drained.

4.—PEATY SOILS.

By peaty soils, I mean that description of land where the surface, or cultivated soil, contains a mixture of sand and peat, resting on sand, gravel, or clay; or what is frequently the case, a mixture of the whole. There are considerable tracts of this description of soil in various parts of the county —in the southern part of Salford hundred—the southern and western parts of West Derby hundred; also on the western side of Leyland hundred; and in that tract of country in the Fylde, which lies between the sand land on the sea coast, and the strong clay loams in the interior.

Taking the average of these peaty soils, I think there have been some improvements in their cultivation since the date of last report. There are individual farms in a high state of cultivation; and there are also on the contrary, others much run out, and full of weeds. This description of soil is easy to cultivate, so far as regards pulverization, and risk of weather; it being soon fit to work upon after rain, if drained; but without great care is bestowed as to cleanliness, it soon gets full of weeds, both annual and perennial; as every seed dropped on the soil is sure to vegetate, and when once the

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land gets over run with them, they are difficult to be got rid of. This soil is exceedingly suitable for the potato cultivation, and there being a great demand here for them, they have been cultivated to a great extent—on some farms every third year, for a considerable length of time,—on other farms every fourth year. Others again allowing it to lie in grass occasionally for a few years, but never long; the great demand for the root tempting the farmers to break it up again. Wheat has generally followed this crop, but of course, there have been two very exhausting crops previously taken from the land in three or four years; and the soil not being of a strong nature, soon gets tired, or run out, without a constant supply of good manure, and every attention paid to cleanliness. When these have been duly attended to, the farmer has done well. There being so many different grades or descriptions of light land, of which these soils form a portion, and the methods of cultivation being much the same on one description of light lands as another, according as they may contain a greater or less quantity of sand or peat, it would merely be a repetition to explain the various peculiarities under each separate head. I shall therefore confine myself to giving a cursory glance at some slight differences there may be between a sandy and a peaty soil, and enter more into the details of management at the conclusion. The best cultivated district of peaty soils, is in the neighbouring townships of Ormskirk, such as Rufford, Scarisbrick, and Latham. In this district, the management is generally very fair, and some parts exceedingly good. The potato, on this soil, has been the principal money making crop, and in consequence, is very often introduced in the rotation, being sometimes planted two or three years together on the same land. The disease in this root begins to frighten the farmers, causing them to sow more turnips, beet root, and carrots; all of which do well with proper attention. The rotations have been 1st potatoes, 2nd wheat, 3rd clover; or 1st potatoes, 2nd wheat, 3rd oats, 4th potatoes, 5th wheat, 6th clover; and with some farmers 1st potatoes, 2nd wheat, 3rd oats, 4th clover. This last mentioned is the

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most common. On this soil there are great breadths every year of early potatoes, raised for the large towns in the neighbourhood. After they are taken up, the land is either planted with swedes, or sown with yellow turnips, and frequently good crops are obtained. On a considerable portion of the light peaty soils in the townships of Heaton Norris, Didsbury, Withington, Chorlton, Stretford, Flixton, and other townships on the Mersey, it is a common practice to trench with the spade, in the winter, a part of the clover root intended for potatoes. This is ready early in the spring for planting with potatoes, which are followed by turnips the same season. The principal defects in the cultivation on this soil are, a want of cleanliness, deficiency in the quantity of manure and calcareous earth, also, the not allowing it to lie in pasture between each course of crops.

5.—SANDY LAND.

A great extent of land, upon the western coast, is covered with sand hills, blown off the shore at low water. They are generally conical in form, and quite barren. In order to fix the sand, the owners of the land plant stargrass, bent, or sea weed, *(Arundo Arenaria,)* which is a very coarse kind of grass, on which the rabbits will feed. The inhabitants also make hats, bonnets, and baskets of it, which look well, and are durable, if skilfully put together. I am of opinion that if these sand hills were levelled, and covered with either marl, peat, or clay, (of which I believe there is plenty beneath the surface,) this land might be made worth from 20s. to 30s. per statute acre rent, at an expense of from £15 to £20 per acre. In its present state, I do not consider it worth 6d per acre of rent.

I am of opinion that the country, for a great way inland, has been covered with sand, blown from the shore, at some period or other; as, in several places, where there have been holes, pits, or sluices, dug in the ground, several feet deep, the subsoil about two feet below the surface, is a peaty soil, in which there are evident marks of the plough. The soil,

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from the top of this subsoil, to the present surface of the land, is evidently a marine sand.

If the present sand hills were levelled, sea mud might be got in some situations, for improving the surface; this is made use of at present by some of the farmers, and has been found to improve the land wonderfully; but there is too little attention paid to crossing the soils.

The cultivated sandy land extends from one to two, and in some places, three miles from the coast, beginning south of Liverpool, and ending on the banks of the Ribble; commencing again at Lytham, and ending at Fleetwood. Then crossing the Wyre, and going along the shore to the north of Lancaster.

The sand here is nothing near so barren as that in the inland districts of the county, being full of broken and decayed shells, &c., consequently there is a considerable portion of calcareous earth, mixed with the siliceous. Wherever the land is well cultivated, and laid down with good grass seeds, in a proper manner, the turf soon gets as thick and close as a carpet. When allowed to lie in grass it will naturally produce white clover and other fine herbage, but not heavy crops, unless it receive very liberal supplies of manure. Grain will also yield better than appearances will justify, from the bulk of the straw. This soil is also suitable for the potato husbandry, which has invariably paid well, and consequently crops of the same have been much cultivated, perhaps too much for the nature of the soil. The rotations on the sand land farms, are 1st potatoes, after grass or clover, 2nd wheat, 3rd oats, then clover or ryegrass again; or 1st potatoes, 2nd wheat, 3rd clover. Here there are two green crops for one white one, but then the clover comes every third year, and consequently the land gets exhausted by it, without frequent applications of marl. A few farmers take 1st potatoes, 2nd wheat, 3rd clover, 4th oats. The best farmers who follow this course, give a top dressing of dung, or compost, to the clover. Thus the land receives refreshment every two years, which from the nature of the soil, is required—sometimes it is allowed to lie in grass a few years. On this description of

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land there is little of either old meadow or pasture, but generally a relay of grass land, which can be taken up, and a portion afterwards laid down in its place, thus allowing it now and then a little rest.

I think it would be a great improvement to allow the land to lie a few more years in grass every course, and to be pastured by sheep. Three years would be sufficient to keep it fresh and hearty, if laid down clean and in proper condition. The farms are generally small, and of course the enclosures are the same, and thus not so fit for sheep stock. By making choice of the larger breeds, they would remain quiet in small fields.

Potatoes have been the universal fallow crop on this description of land until lately. The risk, in that crop, from disease, has caused the introduction of turnips, mangel wurzel, and carrots, to a great extent, but the farmers still cling to the potato as the general fallow crop, which was always considered a sure and profitable one, before the disease appeared. The preparation for this crop is exceedingly various; some digging the land one spit, others skim-ploughing and trenching in the furrows. Others moreover, give the land two or three ploughings and harrowings, or one ploughing, and then using the cultivator and harrow. When the land is prepared by the spade, it is generally dug or trenched in the winter, and in the spring drawn out into drills, the dung spread in the furrows, and the sets laid upon it, and covered by reversing the drills. Some farmers prepare the land by the plough, harrow, and cultivator. Then spread the dung on the surface, and plough it under, into ridges of six feet each. The sets are then dibbled in, and covered by a light harrow. In this case, just before the plants appear above the ground, a covering of soil, from the furrows, is given to the ridges, with the spade. The crop is afterwards kept clean, or should be, by hand weeding, which is but a poor substitute for the horse and hand hoe.

Others will spread the dung on the clover root or stubble land, and plough it in by one furrow, leaving the land in

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ridges of six feet wide, the seed being dibbled in. The rising crop is covered with soil from the furrows, and the crop hand weeded as in the preceding case.

When the potato, or other root crops, are removed from the land, it is ploughed one furrow, into ridges of six feet, the wheat sown broadcast and harrowed in. Some few farmers are beginning to drill it; and one or two, near Southport, dibble in the seed at nine inches distant one way, and four and a half the other; so that the hand hoe can be used in the spring. This plan is said to answer well, while but about half the seed is used.

It seems surprising that the farmers on this soil always plough the land into ridges of six feet for the wheat crop, often well raised, and the furrows well cleaned up. I should however, recommend that it be kept as flat as possible.

6.—SANDY LOAMS.

There are no extensive tracts of this description of land, and yet there are few parishes but what contain more or less; in some places, several farms lying together, and very often, only parts of a farm. This is a happy description of land for our Lancashire climate; being neither soon injured by too much wet, (if drained where required,) or a too long continuance of dry weather. I consider that on an average of seasons, there are the fewest failures of crops upon this, than almost any other description of soil. Taking the general rent paid, I think the largest profit is left to the farmer. With proper management, good crops of any description, either of roots, corn, or grass, can be raised. In Lancashire, where there is such a demand for potatoes, it is more valuable than in other districts, under similar circumstances, in other respects.

This soil, in any part of the county, has, for a long time, been under fair cultivation; of course some farms under better cultivation than others. With a few exceptions, of individual farms, a considerable improvement, notwithstanding, may be made in its cultivation. Draining the wet and springy parts, a more perfect cleaning of the land, and allowing it to lie longer in grass between each course of crops,

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with a more liberal attention to the manuring and seeding, would repay the farmer and landlord well. Being an easy soil to work, not soon affected by the seasons, and fit for general cropping, the farmer is always at it. He cannot think of letting it rest. It may, in fact, be compared to the willing horse. The most common rotation is 1st potatoes, 2nd wheat, 3rd oats, and 4th clover. Then, after two or three courses, letting it lie a few years in grass. The generality of farmers lay down with red clover and rye grass, and mow twice the first year, but the pasture, in such instances, is never good. Others take 1st potatoes, 2nd wheat, 3rd clover, 4th oats. There are but few however who adopt this course.

Potatoes always answer better after clover or grass, than after a corn crop. Oats also do better after wheat which has followed potatoes, turnips, or fallow, than after clover.

There are few farmers at this time, on any of the light soils, but what grow a few turnips for their own stock, or for sale, but they come in the rotation in the place of the potato crop, and the following crops are the same as after potatoes. On this soil, as upon peaty soils, some farmers adopt a three yearly course, viz:—1st potatoes, 2nd wheat, 3rd clover. This is getting more common with the best farmers; but generally, after the second or third course, the land is allowed to lie in grass a few years—these farmers have, of course, a relay of pasture to take up when a part is laid down.

In suitable situations, early potatoes are raised for the market, which are followed by turnips the same season. Sometimes swedes are planted, but more after the yellow turnips are sown; and frequently, by the best farmers, with seed taken by themselves the same season. The land intended for *early potatoes* has either a couple of ploughings or harrowings given it in the autumn before, or it is skim ploughed and then delved in the winter, one full spit, including the light furrow, or this light furrow trenched in. By any of these methods the land is ready for planting, so soon as the weather and season will answer. It is seldom there are any planted in the fields before March.

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As a whole district, I consider the potato cultivation is best understood, and under the most superior management, in the Townships around Ormskirk. I shall therefore give the general management as practised there.

For the *earliest crops* the land is prepared, as before stated, either by the plough or the spade. Soon after Christmas, those sets to be the first planted, are cut from the nose of the potatoes. These are then laid upon a floor, which is first thinly covered with sand, ashes, or sawdust. The sets are then laid upon this, side by side, close together, but only one set deep, with the eye upwards, then a little sand, ashes, or sawdust spread over them. When the weather is frosty, mats, sacks, or straw, are spread over the whole. In open and mild weather, this covering is taken off, and the room properly ventilated. By the time the weather and the land are suitable for planting, the young shoots are got from a quarter of an inch, to one inch long, and are stout and vigorous.

The land is formed into beds of four and a half feet, with intervals of one and a half feet. The dung is spread on the beds, and the sets laid upon the same; very frequently thirty tons, and in some cases forty tons per acre of good dung are given. The sets are carried and carefully laid side by side on a board, or sometimes the wife's tea tray, (this is said to be the most profitable way of using it,) being laid with care upon the dung, at about nine inches distant every way. They are then covered with the soil from the intervals, with the spade. When just appearing above ground, another light covering is given from the intervals.

For the general crop of *early potatoes*, the management is much the same, except that there is not the same trouble taken with the sets. Sometimes, indeed very frequently, a second crop of potatoes is taken from the same ground. This will be from that part of the land on which the prepared sets have been planted; and has in consequence, been the crop first taken up. The sets are prepared for the second crop as for the first, and carefully planted the same day as the first crop is removed.

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The second crop will, of course, appear above ground in a very few days after the first one is removed. As the general crop of the early potatoes is being taken up, (as I have before stated,) swedes are planted, by the best farmers, every day during that operation, which continues until about the middle of July. Then the sowing of yellow turnips commences, and is continued until about the 7th of August, when it is considered too late to raise turnips with any chance of success. Some farmers plant no swedes, but sow the yellow turnip upon all the land on which the early potatoes are grown. For the general crop of *winter potatoes*, the land in this district is prepared, *by the best farmers*, by one deep ploughing, then using the cultivator and harrow, or plough and harrow, until the land is well pulverized and cleaned; it is then drawn into ridges of *three feet apart*. The dung spread in the intervals, and the sets laid upon the dung at from nine to twelve inches apart, and then covered a considerable thickness by reversing the ridges with the double mould board plough. In a fortnight, the tops of the drills are harrowed off, nearly to the sets, and the intervals gone through with the drill harrow and cultivator. When the plant is appearing, the double mould board plough is again used to cover the plants for three or four inches. As soon as the plants are from three to four inches high, a furrow is taken off each side of the drill or ridge; or, the drill cultivator and drill harrow are used at intervals, and the plants kept clean by the hand hoe, and hand weeding. Before the tops meet in the intervals, the double mould board plough is used for the last time, and the best farmers are very particular about this last finishing stroke. If the mould boards are moveable, which is generally the case, they are set narrower; but if not, a single mould board plough is used. This work is done when the soil is just in a damp state, but not wet. The soil is not put close to the plants, but is raised on each side of the drill, above the level of the top of the same, leaving the plants standing in a hollow at the top of the drill. This operation will be best explained by the following diagram.

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DRILLS UNFINISHED. DRILLS FINISHED.

When rain falls on potatoes, it runs down the leaves and stems; and of course, when the drills are finished on the above plan, the water will sink down to the roots and dung, thus benefiting the crop; but if the earth is put close to the plants, on each side, all the rain water will run down the sides of the drills into the furrows, and would, consequently, benefit the crop very little.

The best farmers in this district, and also in the townships north and south-east of Liverpool, give their potatoes very liberal supplies of good dung. From twenty to thirty tons of farm yard manure are generally given to the acre; but, if night soil and ashes be used, it would require from five to ten tons more. Lime and marl are now little used on any of the potato, or light land farms. The farmers have had, and most of them still retain the idea, that both are injurious to the potato crop, but more particularly the lime. They are of the opinion that lime causes them to scab. My own experience tells me the contrary; having found both to be beneficial to the potato crop. I have seen a few cultivators of this root lately using light dressings of marl. Guano is rather extensively used by light land farmers, in raising turnips, and top dressing clover fields.

Potatoes are grown to a considerable extent on the sandy, peaty, and loamy soils, in the *south-east portion* of West Derby hundred, and there the rotation generally adopted is 1st potatoes after grass, 2nd wheat, 3rd oats or barley, 4th clover. Others take the oats after grass, following with potatoes, wheat, and clover. Sometimes, where early potatoes are grown, and where the soil is more particularly adapted for this root, the land is continued in potatoes for two years after; breaking up from grass, with an intermediate crop of turnips, cabbage, &c. The general method in preparing the land after grass for the potato crop, particularly the early

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stones, is to pare the sod off in the winter months. About the month of March, the sod is dug under, along with the manure, and formed into ridges or beds, four and a half feet in width, with one and a half feet intervals. These operations are generally contracted for at the rate of fivepence or sixpence per perch, for both paring and delving. The seed is then planted by means of a "setting" or dibbling stick, shod, and provided with an iron crook, at a proper distance from the lower end, for the purpose of regulating the depth, and for the operator's foot to be placed upon, should the earth prove at times too hard to get the stick down by the usual pressure. This operation is commonly performed by women, with children following to drop sets in the holes. The land is then gone over with a hand rake, or brush harrow, for the purpose of filling up the holes, and covering the seed. When the potatoes have just vegetated above the soil, they are covered again by spade labour, taking the soil from the reins, or trench, on each side the ridge. By this process fresh vigour is given to the crop, and all the weeds kept under. The after cultivation is merely hand weeding, and sometimes hoeing; the latter but seldom. The gathering of early crops generally commences about the latter end of June. As the ground becomes clear of this crop, swedish turnips are planted, or common ones sown, on the removal of which, wheat is sown towards November. On the sandy loams or peaty soils, sometimes early cabbages are planted in November, after the potatoes, and sold off in the spring, in which case the land is planted again with potatoes.

Other farmers plough this land intended for potatoes early in winter, giving it a light furrow. When dry enough, in the spring, it is cross ploughed deep, and well harrowed. The dung is then carted and spread on the surface, and ploughed in, forming the land into four and a half feet beds. The potato sets are then dibbled in, and covered by a light harrow wrong side up, a brush harrow, or a garden rake. The after cultivation is similar as before.

Others again prepare their potato land, by turning two or three furrows on each side the rein of the existing ridge, as

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the width of the ridge will allow, into the rein, leaving the centre of the ridge untouched. The manure is then spread upon the ploughed part, and the sets laid upon the manure, being covered by the spade from the unploughed portion; sometimes the manure is covered before the sets are laid, in which case, the setting stick is used for the purpose of planting. On some of the very light soils, the surface of the unploughed portion is merely pared; casting the parings in the centre of the ridge; the plough is then used, taking deep furrows of this undisturbed soil, and casting it upon the manure, as far as is practicable. The harrow is afterwards drawn, wrong side up, down the ridge, which causes a complete covering of the manure, by scratching a portion of the soil at the sides into the centre. The land is then planted by the setting stick, and the work proceeded with as in other instances. There are other variations from these methods, as circumstances dictate, being in general a combination of the plough with the spade. The practice of planting in beds in preference to drills, is carried on in a great measure from it being said the potatoes are of better quality by the former, than by the latter mode.

The preparation for the wheat crop is made by sometimes ploughing the land previous to sowing, and afterwards harrowing the seed in; at other times the seed is ploughed in by a light furrow, the former being mostly practised on the stronger or heavier loams, and the latter on the more light, sandy, or peaty soils. Oats after grass are universally sown on one furrow, the seed being harrowed in; but if sown after wheat, the general plan is to cast the ridges down by a very light furrow in the autumn, after the removal of the wheat crop; then giving the land one furrow in the spring, sowing the oats broadcast, and harrowing them in. The clover and grass seeds are sown immediately after, or before the oats appear above the ground. The clover is generally mown twice the first year, and very often once the second; it is then either allowed to lie in grass a few years, or is again broken up, and put through another course of cropping.

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The following is the management of some of the best farmers near Liverpool, on this description of soil. The rotation is 1st potatoes or turnips; 2nd wheat, drilled; 3rd barley, drilled, and sown with grass seeds; 4th cut for hay; 5th cut again for hay; 6th pasture; and 7th pasture. The land is ploughed lightly, from grass in the autumn. In the spring following, the management is somewhat similar to that adopted near Ormskirk, for root crops. After the crop is removed, the land is ploughed and harrowed, and the seed wheat drilled at six inches. After the wheat crop is removed, the land is ploughed, and allowed to lie all winter. In the spring following, two more ploughings, harrowings, and scarifyings, are given; afterwards the barley drilled, and the clover and grass seeds sown by a broadcast machine; the land being quite flat, it having been thoroughly drained. When the barley crop is removed, the seeds have a top dressing, with from fifteen to twenty tons of Liverpool short manure, (night soil and ashes,) per acre. The crop is sometimes cut twice the next year, followed with another dressing of short manure, and mown once the following year. The next two years, the land is pastured.

Others follow the same system in every respect, except that they take a crop of hay *every year*, and pasture none. In this case, a top dressing is given every year, either with short manure or guano, but generally with guano for the last crop of hay. On this description of farms, the whole, or greater part, of the produce goes to the Liverpool market. There is no permanent grass on these farms.

The foregoing details constitute the principal peculiarities of the light land cultivation in this county; the districts named are the several localities in which one peculiarity is more extensively practised than in any other, they, in fact, constituting the principal light land districts; still they are not confined to those districts alone, there being individual farms and localities, though of smaller extent in most parts of the county in which similar practices are adopted. As has been before stated, the principal defects in the light land cultivation is

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this county, is a want of cleanliness, attention to seeding, and a deficiency of quantity and attention in manuring; yet there are farms and districts of tolerable extent in which all these are minutely attended to, and in the cultivation of which, they are to be surpassed but by few.

7.—STRONG RICH FRIABLE LOAMS, INCLUDING LIMESTONE LAND.

Of this description of soil, like the sandy loams, there are no extensive tracts, or districts. This happy soil generally rests either on lime or sand stone rock, or on sand or gravel, at a considerable depth from the surface, and some places on a substratum of a marly substance, under which there is sand, gravel, or rock. In most cases, from the nature of the substratum, the cultivated soil is naturally dry, and the cultivation generally of a fair medium quality, but seldom as good as it ought to be. I have often seen in Newspapers and elsewhere, farmers on this description of land, extolled as being good farmers, merely because they get good crops, and their stock looked healthy; when, at the same time, the principal merit lay in what nature had done for the land. Such land is easy to cultivate, and will answer well for any description of crops, whether root or grain; being also suitable and profitable for either permanent meadow or pasture; which is not the case with most other soils, or at least the lighter soils. The land is generally the cheapest at the rent put upon it. Its general management is various, there being no particular rotations adopted, or any crop for which it is more adapted than another. In most localities the farmers are prohibited from breaking up certain portions of old grass, unless under very strict regulations.

Considerable increase might be made in the produce of these soils, in a majority of instances, in this county. Being capable of producing tolerably moderate crops with very trifling management, the cultivators naturally get careless. What is in grass, is frequently mown year after year, with little or no

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application of manure; and what is in arable cultivation has not that care and attention paid to it which it should have. This description of soil is worthy of every attention, as the returns from any judicious outlay, are more than double that which can be obtained from most other kinds of soil.

8.—HOLME, VALLEY, AND ALLUVIAL LAND.

These soils, of course, lie near to, or on the banks of rivers, rivulets, and brooks, and are generally in grass. Some require draining, and the management is far from being of a superior character. Nature having done too much here, it makes the occupiers lazy. However, there are portions, and in some situations, large tracts under good management.

Some would be very much improved by having the rivers and brooks cut wider and straighter, with the banks on each side raised. By this, many crops would be saved. The Douglas is very faulty in this respect. The rich substance which would be got out, by cutting this river wider, would pay for the work as manure for other land.

9.—CLAY LAND.

What I call a clay soil is, that which has little silica and vegetable mould in its composition, and of course, is compact and adhesive, often resting on a stiff clay, with little or no porous substance between the surface soil and the subsoil.

This is a soil difficult to cultivate in a moist climate, if under arable cultivation, and as difficult to drain, on account of the soil and subsoil being so compact and adhesive. Generally, it is under the worst management of any in the county, and I consider that its cultivation is much deteriorated since the date of Mr. Dickson's report, in 1814. The most enterprizing farmers have been looking after potato soils. A clayey land arable farmer, in Lancashire, should never sleep with both eyes at once. Like a good haymaker, he should always be on the look out, and preparing for rain. Every advantage

and opportunity of every favourable hour should be taken. Yet, from causes above stated, the dullest men are the chief occupiers of this soil.

The rotation adopted on the above description of soil is, with some farmers, particularly in the Fylde, to break up from grass with an oat crop on one furrow; 2nd plain summer fallow; 3rd wheat; 4th beans; and then fallow, &c. again. Others sow oats two or three years in succession, after breaking up from grass; then give the land a summer fallowing for wheat, to be followed by oats; they have then fallow, wheat, and oats, for several courses, being afterwards laid down to grass for from six to ten years. Others take 1st oats, after clover or grass; 2nd summer fallow; 3rd wheat; and 4th clover, cut twice. Others again take 1st oats, after clover or grass; 2nd summer fallow: 3rd wheat; 4th oats; and 5th clover, cut twice. Others 1st oats, 2nd fallow, 3rd wheat. Sometimes in the above rotations, beans are substituted for a part of the oat crop. In some parts of the Fylde district, pease or vetches, or both, are inserted with the beans, if sown broadcast. The best farmers now sow the beans in drills, at from twenty-four to thirty-six inches, and horse and hand hoe the crops; but this practice is far from being general, although it now is on the increase. There is seldom any manure applied to the summer fallows. Where clover is introduced, there is often a top dressing of manure or compost given to the clover root in the autumn or winter, after the preceding crop is removed. Sometimes a dressing of lime is given to the fallows, but not so frequently as formerly. Some farmers give a top dressing of guano or soot to the wheat crop in the spring.

In the Fylde district, or North Lancashire, the best farmers on this soil generally give the land a deep furrow in the autumn preceding a summer fallow, leaving it in ridges five or six feet broad. It then gets mellowed by the winter frosts. In March or April, as the weather and time are suitable, it is well harrowed, and another ploughing given, reversing the ridges. In the course of the summer, two or three more

ploughings and harrowings are given, but never harrowing or breaking the land very fine, for fear the soil should go together again after heavy rain. In ploughing, always reversing the ridges, and never allowing the land to lie flat. The wheat is generally sown in September or October, and ploughed in by a light furrow, gathering the ridges; thus leaving the growing crop on high narrow ridges. The quantity of seed sown, is from two to two and a half bushels per acre, according to the advance of the season when sown. After the wheat crop is harvested, the ridges are fallowed down; that is, the ridges are split by giving the land a light furrow, and turning the soil towards the furrows between the ridges; but taking the first furrow at such a distance from the reins, so as the soil will not fall over into them. The land is thus left in half ridges all winter, and in the spring, two ridges are gathered in ploughing, whether intended for beans or oats.

In South Lancashire, the land intended for summer fallow is, in some cases, ploughed very light in the autumn, but in other cases, the first furrow is not given until even April or May; and perhaps not more than two more ploughings and harrowings in the course of the summer. In some cases the seed is harrowed in. In South Lancashire I consider the summer fallows to be executed exceedingly bad. They are generally made into a sort of fill up time; that is, they work in the fallow when they have nothing else to do. They have an idea, that they have a whole summer to do the work in, of course, "there is time enough yet;" the consequence is, the work is frequently done in damp weather, or done all at a push, and, of course, not half done. The farmers seem to forget, or rather never think, that there are several crops depending upon the fallow.

There are few operations in husbandry less understood, by farmers generally, than that of managing a plain summer fallow. Theorists cry out against summer fallowing, as being a waste of land. Such men should get their livelihood solely by farming clay land upon anti-fallowing principles, in a weeping climate. In a dry, hot climate, it is no doubt unne-

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cessary. This operation benefits the soil various ways—by getting pulverized to a considerable depth—by the destruction of weeds in a more effectual manner—by the solar heat being able to penetrate deeper from the frequent ploughings in the summer months—by the pulverised soil absorbing the enriched gases which float in the atmosphere at that season of the year and by a year's rest which is given to the land, that is, rest from production. But it is not necessary, even on stiff clay, in this climate, to have recourse to summer fallows every course, if the land be drained and otherwise under proper management.

Very often now, both in South and North Lancashire, a scarifier or cultivator is used instead of ploughing; but it is said that the fallows have never been so well made since their introduction. In the first place, these implements leave the land flat; and, if heavy rain come, the land is a long time in getting dry again. In a wet summer this is of great consequence. The best fallowers always keep the land in ridges as much as possible, and never use the harrow immediately *after* being ploughed, but always immediately *before*. In North Lancashire, the fallow land is seldom cross ploughed. In South Lancashire it is almost always cross ploughed at the second ploughing.

Draining has been much neglected on this description of soil, but is now getting more into practise. Some farmers seem to think it produces little benefit; and from the way in which some have been done, very little benefit will be seen. The drains have been made too far apart, and too shallow, sixteen or eighteen inches. Ten or twelve feet distant is quite the extent, and should not be less than thirty inches deep. It is little use going deeper on this description of land, unless the clay be full of sand cracks, or there be a vein of sand below.

10.—CLAY LOAMS.

A very considerable extent of both North and South Lancashire is of this description, and like the clay soils, is generally not under the best of management. Nearly the

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whole of what has not been drained, requires it; and a very considerable extent of what has been drained, has been of little use, from being made too shallow, and too far distant. I have seen land of this character well drained fifty years ago, which still remains dry; but this has been far from the general effect produced from draining. At present there seems to be a better system adopted where draining is in execution, and no land will pay better for it than the strong clay loams. Some land of this description is doubled in value by it, when it is properly done. Plain summer fallowing may then, in a great manner, be dispensed with, except in late wet springs and summers.

Although a great extent is still undrained both in North and South Lancashire, yet summer fallowing has been getting less common every year than formerly. Potatoes, turnips, beet, cabbage, and beans, are frequently substituted for the fallow, and where the land is drained, this can and is done with success; but where the land is not drained, I believe there is no profit attending the green crop system, and particularly in wet seasons.

On almost every farm of this description, there is a portion of old grass land attached, and dairy stocks kept; and when situated in the neighbourhood of towns, or near a railway, the milk is sold; but if at a distance from either, cheese or butter is made, the butter-milk being given to pigs. On these farms calves are reared, while on the milk farms, near large towns, they are, in some cases, fed for butchers, and in others, sold when only a few days old, to the breeding farmers. On the cheese and butter-making farms, the male calves are frequently fed for the butcher.

The rotations adopted on the arable part of these strong soils are various. Potatoes, swedes, and the yellow bullock turnips, are the principal substitute for a plain fallow. A few farmers grow a little beet, and fewer still some cabbages. Yet there are very few large farmers but what have a portion of summer fallow every year. After the green crop, or fallow, wheat is taken, then oats, and fourth, clover cut twice. Some

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farmers take 1st oats, 2nd root crop or fallow, 3rd wheat, 4th oats, 5th clover. Some crop as long as three seeds are returned after a fallow, or fallow crop, and then let it lie for pasture without sowing grass seeds; these farmers are never troubled with fat stock, or overflowed with milk and butter.

In some parts of the Fylde district, there has been no improvement either on the land or implements, or manner of using them. Four horses are still used in ploughing. The same extent in plain summer fallow every year, and perhaps less manure or marl used.

At the date of last report, it was common in the Fylde district, to marl a grass field every year; it was then ploughed up for oats, and some farmers took two or three crops in succession. The land was then summer fallowed, and in this process the land had four or five ploughings and harrowings given; then wheat was sown in September or October, followed with either oats or beans sown broadcast, fallow, &c. repeated several times, and afterwards allowed to lie in pasture six or eight years.

The above rotation is a three years' course, but some extend it to four years, as 1st fallow, 2nd wheat, 3rd beans, and fourth oats. This class of farmers now introduce potatoes or turnips instead, on a part, or the whole of summer fallow, and clover instead of the bean crops.

I have before said our worst farmers, and I also mean the least intellectual and energetic men, are on the clay and clay loams; notwithstanding, until these soils are well drained, the most vigilant and industrious will, *in wet seasons*, be frustrated in their endeavours. *In such seasons*, with the land undrained, it is impossible to make a good plain fallow; and to a green crop it would be still worse. My advice is, to keep such land in grass until it *can be well drained*. Yet, when this has been done, and when the after management is, or has been good, the best and the heaviest crops of grain, roots, and clovery, have been raised from our clay loams. An inexperienced, or a thoughtless man, should never attempt to cultivate a strong clay, or a strong clay loam, in our weeping

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climate, even when it is drained. But, "what a man *has done*, another man *may do*," and I know a few first rate farmers, on clay loam, whose wheat crops average between forty and fifty bushels per acre, while the general average is not above twenty-four, if so much. Other crops are in the same proportion. To describe the general management, which is but *too general*, would be of little use, as it is not worth following. The great defects are, no drainage, shallow ploughing, working the soil when out of order, which *decreases* the weight of crops, and *increases* the quantity of weeds. Short manuring is also much more practised on these soils than on the lighter soils; and little or no attention paid to the quantity and quality of seeds sown. Some farmers after fallowing for potatoes or turnips, plough the land into very high ridges, of six feet, including the intervals, and plant two rows of potatoes in the centre, one foot from each other, and the plants in the row, nine inches distant. When swedes are planted, there are often three rows planted in each ridge, the intervals being scarified, and the loose earth shovelled up to the plants in both instances. It is of great importance, when fallowing any strong soil, to plough deep, particularly in the autumn, as the soil not only lies dryer in the winter, but is easier to work the spring following, and is much sooner in a fit state for working to advantage. This is little practised, particularly in South Lancashire, the farmers generally saying that deep ploughing produces weeds, quite forgetting that whatever will produce the growth of weeds, will promote the growth of useful plants, if the weeds are kept down. Our very best land both does and will grow weeds, if neglected. Another great evil is, a want of energy in the farmer, even when he has the knowledge, and thus often neglects a few weeks of favourable weather for getting in a green crop, cleaning them afterwards, or stirring the fallows. On such soils, great energy and perseverance, at certain seasons, is absolutely necessary to carry out their cultivation with perfect success. This cannot be too often urged on the farmers. A farmer on a very strong land must not go about his business like clockwork. He and his

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servants must, in *fine weather*, work like sailors in a storm, and rest on their oars when the weather is adverse. Most farmers plant potatoes, turnips, or beans, in place of a plain fallow now, but without profit either to the land or themselves, where there is a deficiency of knowledge, of capital, or of spirit, which is but too often the case either in one, or all of these requisities.

With the best farmers the bean fallows are prepared before winter, and the land left in thirty or thirty-six inch ridges. Then the seed can be got in the first favourable weather in the spring. Some in this case put the manure in the land in autumn, and others in the spring. The seed is sown on the centre of the ridge, with a drill machine; and with some farmers, every favourable season until the crop is too high, is made use of for scarifying the intervals and cleaning the crop. The last operation is to run the double mould board plough up the intervals, thus raising the soil to the plants. Where the proper preparation of manuring, or after cultivation, is neglected, it cannot be called a fallow. However, where this crop is chiefly cultivated as a fallow crop, the management is often good; because most of those who drill this crop are thinking men, and men who have a desire to improve in their practise. Wheat is always sown after all the plain fallows or fallow crops, generally in one furrow, broadcast, and harrowed in. Some take clover, and others oats, after the wheat crop. When oats are grown after wheat, clover is sown on this crop. The seeds are mown once, and often twice, the first year, and then ploughed up for oats; or lie pasture a year or two, being then broken up for oats, and put under another course. With the indifferent farmer, there is little regularity in their management in any respect, and in the the majority of instances, out of condition, both when planted or sown with fallow crops, or when sown with clover and seeds, the results, of course, are partial, if not entire failures.

Several of the Scotch farmers on Mr. Clifton's property, dispense entirely with summer fallow. They cultivate first, beans or turnips in drills, in place of summer fallowing; 2nd

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wheat or barley; 3rd clover; 4th pasture; and 5th oats. These men have leases of nineteen years, with liberty to cultivate the whole of their farms on the convertable system. They have each several of the old farms laid together. The old farm houses and outbuildings have been pulled down, and new and commodious ones erected in suitable situations for the convenient occupation of the land. All the old fences have been levelled down, and new ones made, so as to have but few fields, of an oblong shape, with the fences parallel to each other. New and straight occupation roads have also been made, so that every field lies with one end to the road, with new gates and posts to each. The new fences are of white thorn, planted on the surface of the land, the whole of which has been drained with common open tiles, on soles; the parallel drains being from twelve to eighteen feet distant, and from thirty to thirty-six inches deep, and appear to be well executed. A great number of old marl pits have been filled up, which, with other portions of waste land, have been brought into cultivation. The whole of the green crops, clover, and straw, are consumed on the farms, and the manure applied to the root crop and beans; they also use a considerable quantity of guano to the turnip crops. The land and horse labour of the draining have been done by the tenant, and the materials found by Mr. Clifton; and in the construction of the new fences, I believe the work has also been done by the tenant, and the quicksets and protection found by the landlord. All the ploughing and harrowing on these farms are done by two horses abreast; the corn crops are mostly sown in drills, and the thrashing, chaff, and turnip cutting, by steam power. Ploughing by two horses, and thrashing by horse labour, is getting common among the native farmers, not only in the Fylde, but in other districts in both North and South Lancashire, and a spirit of improvement is also manifesting itself, in various respects, with regard to the general cultivation of the soil.

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OLD MEADOW LAND.

There are few farms in Lancashire, without their portions of old meadow; and, until lately, these were held sacred by the Landowners, who occasionally allow the breaking up of one, but this is always considered as an indulgence. They have, until lately, been considered a sort of *gold mine*, but one which was *never to be touched*. The general bad management of arable land has, no doubt, been the cause of this. As better management is introduced, and the land properly laid down for a few years, in every rotation, this feeling in favor of old meadow land will die away. For my part, as a farmer, I should always wish to have a little on my farm, if I had land suitable for it. On light sandy or gravelly soils, it is not a profitable way of occupying land, but on bog, it may answer. The above has reference to upland meadow, which cannot be irrigated. When upland meadow can have water thrown over it at proper seasons, it will be profitable. Irrigation is not carried out to the extent it might be, and in some districts is not understood. I very often see strong clay soils nearly level and undrained, with the water thrown over it, and remaining upon it for weeks, doing more harm than good. In some districts, there are considerable portions of water meadow lying on the banks of rivers, rivulets, and brooks, which are very productive, and let for high rents. On these there is always some risk, particularly in the western division of South Lancashire, where the rivers have a sluggish course. There is but a small extent where the water can be thrown over it at the pleasure of the occupier, except at a time of flood. On some portions there are no embankments raised on the sides of the rivers; and here the water flows naturally over the meadows at floods, and these portions are most subject to have the crops and after grass spoiled. On other portions there are embankments raised, to keep the rivers within due bounds during floods. In these embankments there are sluices or flood gates, where the water, when it is higher in the river than the level of the meadows, can be

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allowed to flow on the meadow, if the occupier think proper; there are also other places where the water can be drawn off when the rivers subside. The great desideratum on these meadows is, to keep all the banks and sluices in proper repair, to have a sufficient number of open drains on the meadows, and also in *proper places* for drawing the water off immediately after it subsides in the rivers; as it would be injurious to let it lie soaking on the land very long. Some farmers pay attention to all these matters, while others neglect most of them. If the water lie on the land very long, and the subsoil be *clay*, the crop will be *light*, and the quality *indifferent*. If the subsoil be *sand* or *gravel*, the crop will be bulky perhaps, but at the same time, coarse. In some cases, the alluvial soil is of great depth, and here it is of little consequence what the subsoil may be; but even on this description of meadow, it is of importance to get the water off again early, or rushes and coarse grasses will spring up.

In the townships of Denton and Heaton Norris, on the river Tame, and also in the townships of Didsbury, Chorlton-cum-Hardy, and Flixton, on the river Mersey, (all in the south and south-eastern part of Salford hundred,) there is a considerable extent of excellent water meadow. Some portions of this under good management. Mr. Dean, of Barlow Hall, in Chorlton-cum-Hardy, and a few others in that neighbourhood, have some of the best managed water meadows in the before mentioned district, or I believe in any part of the county. On the Sankey brook, which falls into the Mersey below Warrington, there is a considerable portion of water meadow, but not under the best of management, it being all badly drained. The brook is very crooked, has little fall, and is not banked off; of course the meadows are covered every flood, and often a great extent of hay and after grass lost. The land through which the brook runs, belongs to a considerable number of landowners, who should join at the expense of a new water course, cut straight, and of sufficient width, with embankments on each side, a few feet high. The meadows should then be put in a proper form, with open

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drains in sufficient numbers, of a requisite depth, and in a suitable direction.

In the townships of Winwick and Burtonwood, the meadows are much damaged by a weir erected in the brook, for the purpose of raising the water for feeding the Sankey Canal. My opinion is, that this weir might be dispensed with, and the canal suffer no loss.

At Warrington, there is a portion of good alluvial land under the influence of the Mersey, and covered at flood time with water. There is no embankment on the river side, and the drainage, arrangement of the land, fences, &c., are very bad. The general cultivation is the same, for land of that value, lying so near a large town. Low embankments would be of service in preventing damage, and a better drainage would much improve the quantity and quality of the herbage.

On the main branch and feeders of the river Alt, which runs through the townships of Sefton, Magul, and Altcar, (the locality of coursing notoriety,) there is an extensive tract of rich alluvial land, under the influence of the river. In the two former townships, this land is mostly in water meadow; but in Altcar, and near to the sea coast, some portions are in arable cultivation; this, however, is nothing to boast of. This has, no doubt, been all in meadow, and I am of opinion, it would raise more *clear money* if again laid down in a skilful manner to permanent grass.

On each side of the river, and principal feeders and sluices, there are good, substantial, and well managed embankments, of sufficient height; these, together with the water courses, are exceedingly well kept. In the latter instances, no deposits or obstructions are allowed to remain at the bottom; each side being well sloped, and kept free from weeds. But I am sorry to say, the management of the land itself is bad throughout the whole tract, some parts exceedingly so.

Land of this description cannot be drained with *under drains* like upland, on account of the water overflowing it at certain times; of course the drainage must be by open drains, the depth and width of which should be regulated according

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to circumstances, and also the direction, so that the most *effectual drainage* can be done at the *least expense*, and *loss of land*. The meadows are divided by ditches, which are not kept clear and open, and very little attention is paid to grips, (small open drains,) by which all superfluous water should be conveyed off the meadows into the ditches. Thus the water often stagnates on the land, in pools, for weeks after it ought to have been sent into the sea. It thus damages the land by soakage and starvation; and by exhalation, makes the air unhealthy both for man and beast. Some portions of these meadows would be worth four times their present value by proper draining.

Most of these meadows are occupied by men who have upland farms at a distance, some perhaps two or three miles, and are supposed to be an advantage to those farms. If the distance be near one mile, I think this is a mistaken notion. The *inconvenience* runs away with the *benefit*. At such a distance from the home farm, he must be an *active, determined man* who does *not neglect them*. I consider there would be more rent and profit left, if laid out into entire grass farms, whether for producing hay for the market, or for grazing stock, or a mixture of both. I should recommend the latter, and to *mow* and *graze* the land *alternately*. However, in whatever way it is occupied, a better drainage may be effected.

On the Douglas, from its conflux with the Ribble to beyond Wigan, and on its two principal feeders, the Lostock and the Ellerbrook, there are also considerable portions of water meadow under various degrees of management. The greatest part is very defective in its drainage, and which, I here repeat, is very injurious to the land and crops, and also poisons the atmosphere. The Douglas, and these two feeders, have very little fall in their whole length, and sometimes great damage is done to the crops by floods.

On the Ribble, above Preston, in Walton-le-dale, and still higher up the river; also on the Lune, above Lancaster, up to Kirby Lonsdale, and on various other small rivers and

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brooks in different parts of the county, there are very considerable portions of water meadow. The best tract lying together, I think, is in Walton-le-dale. This lets at a high rent. There are portions on all these rivers and brooks, which are under excellent management, where the produce is heavy and the quality good; but on the greatest extent the drainage is defective, and in some cases, new water courses and embankments require being made.

On the greater part of these water meadows, if properly drained, a good dressing (five or six tons per acre) of lime would be of very great service. The value of the herbage would be very much increased. The lime should be applied in the spring, so that it would be fairly grown in, before the autumn floods.

PASTURE LANDS.

In this county, I consider the farmers more deficient in the management of grass land, than in corn or root crops. In many districts, land is seldom laid down to grass until it is much run, and full of weeds; under these circumstances, it is impossible to make good grass land. And when it is laid down in fair condition, so far as manure and cleaning go, generally speaking, nothing but red clover and rye grass, or seeds from the hay loft,are sown, and cut twice the first year; afterwards left for pasture, and a wretched one it makes. While lying in pasture, little attention is paid, except to the fences, to keep in the cattle. Weeds are allowed to grow, drain mouths and ditches to be trodden down with the cattle, and the droppings left unspread. This is, no doubt, too much the general practice. However, there are farmers, and also districts, where a different course is pursued, where the land is well laid down, and proper attention paid to it afterwards.

Of old permanent pastures, there is no great extent on the light, sandy, or peaty soils. Pastures on these soils generally decline in the amount of produce, as they advance in age. Lime or marl would renovate them, but the plough is often

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made use of instead. On all the strong soils where a dairy stock is kept, there are few farms without some old pasture attached to them, and but too often, little attention is paid to them. The hawthorn, the brier, and the common thistle and ragwort, are often very conspicuous; and to lovers of nature in her unadorned state, are beautiful; but not very beneficial to the farmer and landowner.

TURNIP AND POTATO CULTIVATION.

These being important items in arable cultivation, and having previously given an account of the general management of these crops under the different descriptions of soil, and in the various districts, I will now offer a few remarks, or suggestions, as to the *best principle* of cultivating such crops in this county.

POTATOES

Drilling is by far the best mode of cultivating the potato, both as regards bulk of crop, and the benefit given to the land. Perhaps the quality will not, in some seasons, be quite equal to those grown in ridges. A potato crop comes in place of a plain summer fallow; the crop itself should not be the sole object with the farmer. The land wants cleaning and pulverizing, to prepare it to carry a succession of corn and grass crops, and the object is, to do this, and raise a crop of potatoes at the same time, which prevents a year being lost. Therefore, to accomplish this, the potato should be cultivated in such a manner as to leave the soil in a similar state as that after a good plain summer fallow, or as near the same as possible. This can only be done by cultivating that crop in drills, and at proper intervals, so as to afford summer ploughing among the crop, and at a proper depth, not scratching with a hand hoe. Now this cannot be done when the potatoes are grown in beds. Nothing, in this case, can be done, but hand hoeing and hand weeding, both of which are miserable substitutes for the plough and horse hoe. On my native farm,

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I always cultivated both this crop and turnips, in three feet drills, (excepting early potatoes,) which gave me full liberty to do justice to the soil in the summer months, being at the same time of such great importance to the following crops in the course. I know that I always got as heavy, and frequently heavier, crops of potatoes and turnips than my neighbours did, with drills at two feet intervals, or beds; and the following crops were both cleaner and better, particularly the clover and grass. I am firmly persuaded, that if the farmers were to cultivate their potatoes and turnips in thirty inches or three feet drills, (according to the state of the land,) with proper attention to the crop, with the plough, horse hoe, and drill harrow, so long as a horse can travel in the drills without much damage, they would get quite as heavy, or heavier, crops of potatoes and turnips. Their wheat, clover, or grass, and oat crops, would be one fourth better than they now are, with the same manure. However, slovens should never cultivate any thing in drills or rows, because there is a greater space for weeds to grow, consequently, there would be a worse crop, and the land would be left in a worse state than if planted in beds. I prefer unfermented dung for potatoes, and for turnips, about half rotten. When the potato crop is planted wholly with the spade, I have no objection whatever, but approve of putting the dung into the soil as it is made in the winter; but when horses, carts, and ploughs, are used, I would say, keep off the land when the soil is wet.

TURNIPS.

The principal thing to be attended to, after the soil be properly prepared, is to cart the dung, spread it, cover it up, and sow the seed in dry weather, taking care to cover the dung immediately after being spread, and rolling the drills well after sowing, and again in twenty-four hours. It is a common thing for farmers to wait for rain, in sowing either clover, grass, or turnip seed. This is a great error, and has ruined thousands of acres of these crops. In sowing any of these crops, I am just as much afraid of rain, as I am when

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I have a meadow of dry hay spread out. I would any time prefer having a dry week *after* sowing, than have a shower just *before* sowing.

With respect to the fly, I have known every remedy I have yet heard of, to fail. It is also an error to suppose that when the plants are in rough leaf, they are safe. In the year 1819, I saw hundreds of acres totally destroyed, in several weeks after the crop was considered safe. This, however, is not common. One of the best remedies is, to sow dry and thick, and roll well. Another good remedy is, after the drills have been sown, to sow another row in the intervals, or the whole of the land broadcast, before rolling; the flies will eat those plants first which are not sown over the dung. Another good precaution is, to have plenty of plants ready in a seed bed for planting out. The surest way in dry weather is, not to sow until after the expiration of three or four days after the dung be covered.

An absurd error exists amongst nearly all farmers, against stirring the soil amongst growing crops during very dry weather in summer, for fear of letting in the heat. I consider the *plough* and the *hoe* infinitely superior to the *watering can* in a drought; that is, the watering can *without* the plough and the hoe. In short, to water plants in a drought without stirring the soil *between* each watering, is, I always regard as being almost useless; for the water never gets to the roots, and in one hour, the soil will be as dry as ever; far dryer, in fact, than the soil which has been dug, and has had no water applied to it. Digging or ploughing deep during a drought, increases, or rather puts in force, the capillary attraction of the soil, and raises moisture from the subsoil to supply the roots, and the pores of the leaves by slow degrees, with moisture sufficient to keep the plants healthy and vigorous. Just in proportion as the plough, spade, and hoe are kept in motion, in a drought, in that proportion are the plants kept in good health. This power of attraction in the soil, is a wise regulation in nature; for, without it, few plants would survive a long drought in summer. With respect to water

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ing plants in a hot house, green house, or under hand glasses, if the soil be duly stirred, this is of real use; because there, an artificial atmosphere is formed round the plants, similar to the natural atmosphere in showery weather in the summer.

POTATO DISEASE.

As the potato crop is one which, more or less, enters into the rotation of almost every farmer in the western division of the county, both in North and South Lancashire, and as this crop, on all our lighter soils, is the one on which the farmers have principally depended on for making their rents, and also a living, I think it will not be out of place to make a few observations, and give my opinion, as to the cause of the disease in that root, and also the remedy for its cure, admitting at the same time, that like other physiologists and potato doctors, I may be far from the mark.

Potatoes have been diseased, more or less, in various ways, every year since about the year 1830. The *excess* of disease in *some years* over that of others has been no doubt caused by atmospheric influences. All plants, and even animals, which are subject to *disease*, are *more* and *sooner affected*, when the *weather* and other circumstances are *against* them. This will account for greater damage to this crop in some seasons than in others, since the above period. The analogy between plants and animals is very near. Sudden changes in temperature, or in moisture and dryness, have a great effect upon tender and weakly plants and animals; indeed, *sudden changes* in the weather are the cause of a great number of diseases which attack the healthy and the strong in both the vegetable and the animal world. The healthy and the strong, whether animal or plant, can stand extremes, if not sudden, without injury, but a delicate plant or animal cannot do this. The potato is a very delicate plant at the best, and when *constitutionally* given to disease, must be more so; when not constitutionally given to disease, there are few plants cultivated in the open air, that are more delicate. It is an

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exotic, and also a *tropical plant*; we may therefore expect it to be sooner affected, and more liable to disease, than a native one.

Now as to a remedy for the *constitutional disease* in the potato. Mine is not original with me, for many have faith in the same, and have published their opinions; but I may, perhaps, have some original ideas bearing on the subject, and therefore give them.

My remedy is, a *renewal from seed*. This idea is, I know, ridiculed by some; but I have never yet heard, or seen, one who did so, who produced a good argument in support of their ridicule, for theory they had none. They say that newly raised sorts have been diseased as well as the old. This I shall not attempt to deny, as I do know that *real* newly raised sorts have been diseased; but this does not prove the theory to be wrong, even if they had been affected to the same extent, which has never been the case under my own observation, of those newly raised from seed. If the cattle of a country were very subject to a disease, the remedy, to get a more healthy stock, would be to breed from the healthiest animals in every succeeding generation. No one would expect to attain the highest degree of perfection in one generation. Thus, in potatoes, the first produce from seed might not be free from disease, but this should not convince a man that the theory was wrong. He should continue to raise from seed a generation or two further, before he can be certain of its erroneousness, or of its correctness.

Some men, I find, are of opinion that this root has been deteriorating for the last hundred years; this I do not believe. I have heard my Father say, that about ten years before I was born, this root became affected by the curl; and that there was as much said and written upon its cause, and remedies for cure, as upon the present; but, notwithstanding this, it continued to get worse, until *new varieties were raised from seed*. Two varieties of the old sorts, called "White mealy," and "Winter whites," the farmers were exceedingly anxious to preserve on account of their quality, but were at last

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obliged to give them up. In fifteen or twenty years, there was not an old variety left in the parishes round Bury, and the curl entirely left that part of the country, which came under my observation. For 40 years or more preceding 1830, I do not know of one single year in which this crop was diseased in any case, and I was a cultivator of potatoes every year during that time, either under my Father, or on my own account. We had sometimes bad crops, or, more properly speaking, *light* crops, caused by bad seasons.

If a tree be raised from a cutting, no matter whether a fruit or forest tree, it will decline and decay at the same time as the parent tree, and will be subject to the same disease. With plants raised from bulbs it may be generations before any decay would appear; but still, it appears to me, that sooner or later, recourse must be had again to seed, for a renewal of the constitution of the plant.

In horticulture, gardeners are continually raising plants from *seed*, which are quite as easy to raise from cuttings or bulbs. It is thus they are so successful in getting fine healthy flowers and plants.

All forest trees, hedge plants, and wild shrubs, are raised from seed, and thus their *generic* and specific characters are preserved, and the same race of plants continues without wearing out, but the *varieties* are *ever changing*. Thus, the English Oak, in its flowering and fruit-bearing, comes generally under one of the following species, *Quercus robur*, *Sessiliflora*, or *Pedunculata*, but of the varieties there is no end. Scarcely two trees in a wood will be found the same as regards foliage, or other characteristics. It is the same with other trees and shrubs, the thorn, the hazel, the brier, and every other wild plant, whether tree, shrub, or herb, are ever changing in their varieties. Every plant of the same genus and species, is as much unlike every other, as one man is unlike every other man, or every horse, cow, or sheep, is unlike every other animal of the same species. Some plants, like some animals, exhibit a greater difference in their varieties than others do. I have always been a great admirer of nature,

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and have been a keen observer of her ways, and it appears clear to me, that, to preserve the *general* vigour of races of plants, seeds must be had recourse to. This she plainly points out. But in those plants which can be *raised from bulbs*, it is evidently not necessary to raise from seed often to preserve their general vigour; but, that at some period or other it will be; and that this period may be shorter or longer, according to the seasons or other circumstances, such as the hardiness or tenderness of the plants. Some plants, which can be raised from bulbs, may perhaps be continued to be thus raised for one thousand years, without the original constitutional vigour of the race being very much impaired, or becoming extinct. In others, one hundred years might only be required. In others, perhaps twenty years might bring on the same decay as to require a renewal from seed. It is also exceedingly probable that a tender tropical plant will sooner be impaired in its vigour, in a cold climate, when continually raised from bulbs, than if it were cultivated in its own native climate. Although, generally, a plant raised from seed varies some little from its parent, yet it does not follow that it must always be so. It may now and then happen that a seedling may be exactly like its parent, or some other variety raised before. In some races of plants, this may occur more often than in others. Of course, some varieties of potatoes may be considered old ones, and in fact are so, although newly raised from seed; notwithstanding, it is said, that old varieties have escaped the disease; it is quite possible that they may have been raised from seed not many years before. On the other hand, some of the diseased crops *said* to be *new varieties*, may not be so in *reality*. There is great roguery in selling seed potatoes, as very frequently old varieties have *new names* given them. A farmer will very often buy seeds in the market which are really new to him, but are in fact, very old sorts in the neighbourhood from which they have come; this may be done without any intention of the seller to deceive the buyer. It is well known that the names of varieties are very frequently changed, sometimes for mere fancy, but often from *interested*

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motives. I have always been fond of experiments in farming, and, like many of John Bull's sons, have been easily and often gulled with puffing advertisements. I have given ten shillings and sixpence per bushel, besides paying the carriage from London, (two hundred miles,) for what were called *new* varieties of the potato, and when they got home, I have found that the *name only was new*; in short, that I had been cultivating the very same sorts for ten or fifteen years. I therefore, do not always consider it as a fact when I hear people say that newly raised varieties have been as much or more diseased than the old ones, although they may think it true. Then again, some men will not state the truth, wishing to cover their own neglect by a falsehood, or, from a love of the wonderful, or perhaps having got a crotchet in their heads, are determined that no fact shall drive it out.

At the same time I admit, as I have before done, that newly raised sorts have no doubt been diseased, but this is no proof of the theory being false, from reasons before stated. In short, I consider it a fact not to be *well disproved*, that, having recourse to raising from seed *did* drive away the curl from the potato, in Lancashire, sixty years ago. I am firmly of opinion, that to adopt the same course now, would produce the same effect with the present disease; but not, however, without patience; this can be effected without going to Peru, either for tubers or seed. When potatoes continue healthy, season after season, farmers never think of raising new sorts, as it is a tedious process, and is attended with considerable trouble and care. Fifty varieties may be raised for one good one. I should recommend our principal Agricultural Societies to take up the business of raising from the apple. From my own experience, I would not buy what were called new sorts from any man, except I knew he was a perfectly honest man, and that he had raised them himself.

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ROTATIONS.

Theorists say that two corn crops should never be taken in succession from the same land. This theory is also put in practise in some districts, by good farmers, and as a general rule, the practise is good. I have myself, in my earlier days, been a firm advocate for its universal adoption; but experience tells me that this theory is not correct in every situation. The best practise is that which produces the greatest value of produce, from the same land, at the least expense, without deteriorating the soil. To do this, a farmer must study his soil, his climate, and also his markets. Science tells us we may grow corn crops in succession from the same land, and even one particular description of corn. For instance, barley may succeed wheat, and oats follow the barley, because each one takes from the soil a different material, or require different food. According to science, wheat, or any other grain, may be grown on the same land every year for ages; to do which, it is said, a farmer has only to apply that kind of manure to the soil every year, which is required by the kind of grain sown. Science or theory does not agree with practise, so far as to recommend sowing one particular kind of grain every year upon the same land; but from my own experience, and from what I see every year, in South Lancashire, good husbandry does not forbid either oats or barley following a crop of wheat. The very best farmers, and those who have made the most money by farming, adopt this practise.

A farmer should never have his hands tied on his back, any further than is necessary to protect the property of the landlord. What is good for the latter is also good for the former, if he intend to remain upon the farm. A tenant should cultivate the greatest number of such crops his land is best adapted for, or such as are most in demand in his neighbourhood, always having in view the keeping of the land in a proper state of fertility, or so that it will constantly carry good crops. A landowner has only to stipulate for a certain number of crops being taken between each supply of manure, to keeping this

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land clean, and also to its lying in grass a proper proportion of time.

Some crops are *called* ameliorating ones; I, for my part, do not know which are such. Potatoes, turnips, mangel wurzel, and clover, are considered to be of this class, but I am of opinion, there never was a greater error. They are, in fact, all quite as exhausting as wheat. The only difference is, that the three former afford an opportunity for cleaning the land, in preparing for the seed while the crop is growing. The last crop prevents any weeds from rising, by its getting a start of them in the spring. Grow any one of these crops year after year upon the same ground, along side a peice of wheat, give exactly the same cultivation to each, also the same quantity and quality of manure, and then see which extracts the most from the land. There is just as much common sense in binding a farmer from taking two green crops together as two white ones. If I were a landowner, I would much rather a tenant grew a white crop then a green one, unless the cultivation was well attended to. I am aware my doctrine is not a fashionable one, for there is a fashion in farming as well as in other things.

In South Lancashire, a potato crop is generally taken in place of a plain fallow, because of the great demand for this root. Potatoes always succeed best after clover, or grass of some description, whether it be old or young. Oats always succeed best after wheat, because the soil is always more broken and pulverised, than when sown after clover or grass. The month of May is dry four times out of five, and in a dry May, oats are always much injured when sown upon any description of ley. The furrows lie hollow, that is, there is a certain space hollow under each furrow, and the furrow itself lies compact, excepting what is broken at the top during the process of harrowing in the seed. This is particularly the case in old ley, when ploughed up for oats. From these causes, in a dry May, this crop is very much injured, while those sown after wheat will be a good crop. In a dry May, oats on a ley furrow, are also often very much injured by the corn

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grub. If it be a damp May, the slug or white snail is often equally injurious to the crop; but if sown after wheat, I have very seldom known the grub or the slug to do the crop much damage.

Then again, clover or grass seeds always succeed best after a spring tillage, and, consequently, prosper better after either barley or oats, than when sown on the wheat crop. In a four course shift, where potatoes are taken as a fallow crop, a Scotchman would recommend the following rotation: 1st potatoes after oats, 2nd wheat, 3rd clover, 4th oats. Here the green, as well as the corn crops, are alternate. I recommend, as by far the most certain and most profitable, the following: 1st potatoes after clover or grass, 2nd wheat, 3rd barley or oats, 4th clover or grass. Here there are two green crops and two corn crops together alternately. Those who adopt this course with spirit, and do their duty to the land by manure, and keeping it clean from weeds, have scarcely ever a failing crop of any description, while those who adopt the former course have disappointments every year, however well they may perform their duty to the land. I am quite out of favour with sowing any description of grain after grass or clover, unless the land be trenched, and the sod put below. In preparing clover ley, or old grass land for potatoes, I also recommend trenching, either with the plough or spade. The latter, if hands are plentiful.

I always found both beans and vetches to answer best after wheat, if the soil be strong or stiffish. The former should always be sown in drills, to give liberty for horse and hand hoeing, and weeding. By this method of cultivating this crop, the land will be in excellent condition for wheat; but if they are sown broadcast, the land generally gets foul. One cause of the bean crop enriching the soil, or preparing it for a crop of grain, I consider to be the great quantity of succulent leaves which fall upon the land. Another is, the strong deep taproot which breaks and pulverizes the soil to a considerable depth. Another cause is, the after cultivation which the crop affords when drilled.

PLOUGHING.

There has been great improvement in ploughing within the last few years, which has been brought about, in a great measure, by the annual ploughing matches of the different Agricultural Societies, within this county.

It is now nearly forty years since the first Scotch ploughs were introduced, and also the ploughing with the horses abreast, without a driver. But this system made very slow progress until lately. Both master and man appeared adverse to the adoption of any change in either ploughs or ploughing. A Scotch ploughman looks upon his implement with the eye of a mathematician, and is thus able to point out defects to the plough maker, which no one but a well taught ploughman could do. Until lately, almost every prize was carried away, at all our ploughing matches, by Scotchmen. This made the Lancashire lads look about them; and, when once a Lancashire man begins to think he can do any kind of work as well as other men, he will, by dint of practise, soon become equal to his competitors. This is now the case in ploughing. The Scotch make of ploughs, together with good ploughmen, may be seen in all the best cultivated districts, and even in those districts where the farming, in other respects, is not good.

There is yet, however, a considerable extent of country, which I call the *back settlements*, where the old wooden ploughs are still used, with three or four horses in single file. In some districts the improved ploughs are used, but the farmers still work the horses single; and with these farmers, seldom more than two horses are used. There are good arguments both for and against the practise. On a heavy clay land farm, I should sometimes work the horses abreast, and sometimes single; but I should have my ploughs put together quite different for the different systems. A plough made for ploughing with the horses abreast will never do this work well or easy with the horses single, and *vice versa*. I have known many a man to give up ploughing with the horses

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abreast, merely because his plough was made for ploughing single. It is now quite clear to most ploughmen and farmers, who have attended the various ploughing matches, that the common ploughs of the country cannot compete with the Scotch ploughs, however good the workmen may be by whose hands they are guided. I have seen the best workmen beaten from no fault, but the make of the plough.

However, in my opinion, although the present Scotch ploughs carry away most of the prizes at the various matches, they are defective. In the present make of Scotch ploughs, the beauty of the work performed is more considered, than real utility. The common ploughs of the country cut an *obtuse angle* on the furrow, when turned up, which is a real defect, both as to the labour of harrowing, as well as the covering of the seed. The turf or grass is seldom covered in very well. On the contrary, the present Scotch ploughs cut a very *acute angle* on the furrow, which makes the work look better, and will be sooner harrowed than if the angle of the furrow be obtuse, or even a right angled one. I prefer a right angled furrow. This easy harrowing of the acute angle is the only advantage over the furrow cut at *right angles*, to the surface of the land. The seed will be no deeper or better covered, and the ploughing is done at a greater expense of both manual and horse labour, than when the furrow is cut perfectly square, or rather, I should say, a perfect parellelogram, as a furrow must be broader than it is deep. It is evident the present Scotch ploughs are not very easy to hold, and whenever this is the case, the labour to the horses is increased. The common ploughs of the country are generally neither easy for horse or man, and make bad work. The present Scotch ploughs are *more difficult to hold*, and execute *no better work* than the Scotch ploughs made twenty or thirty years ago; that is, than the *improved Scotch ploughs of those days*, for the *unimproved* ones were as clumsy implements as could be conceived, and yet there are farmers in some parts of Scotland, who say they got better crops with these ploughs, than with those of the present make. Thirty-

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two years ago, I imported a Scotch plough, made by one James Vitch, of Jedburg, Roxburgshire, called "Small's improved Scotch plough." Since then, I have rambled over a great portion of both England and Scotland, and have held ploughs of almost every make, but never found any equal to it, and all of the same make, for easy draft, easy to hold, and for quality of work they were capable of doing. The bottom or sole, was *concave*. Lay a rule upon the sole, and *in the centre*, between the point of the sock and the heel of the plough, the sole plate would not touch the rule by two inches. There are several advantages in this. 1st, the friction is very much reduced. 2nd, the sole, or bottom, never gets *convex* by wear. A plough always wears the fastest at the point of the sock and the heel of the plough, consequently, if a plough be made *level at the bottom when new or newly repaired*, the bottom soon gets *convex* by wear, and of course, unsteady to hold. Again, when the point of the sock strikes against a stone above its centre, the sock will rise over the stone; and if the bottom of the plough be *level* or *convex*, it has a tendency to be *thrown out;* but if *concave*, the stone gives no inconvenience to the ploughman.

Small's improved plough had only one fault. This was, that the breast part of the mould board was too flat. This was no inconvenience, but rather an advantage when the soil was dry, but with a damp soil, it did not clear itself sufficiently. This defect has been remedied in the new Scotch ploughs, but they have all, according to my opinion, added other defects, which more than counterbalance that. The heel of Small's plough was only eight inches behind where the sheath is inserted in the beam of the plough, which gave the ploughman great command over it.

I shall now give a few of my opinions on ploughing, dividing the subject into three parts. 1st, ley ploughing, 2nd, broken land for a corn crop, and 3rd, ploughing fallows.

1st.—Ley ploughing. To do this with accuracy, and with most ease to men and horses, requires the greatest skill in both ploughwright and ploughman. The latter should so far

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understand his business as to be able to point out any defect in his plough. If he is not up to this, he should go to school, but not to the university. He must go to some clodhopper, who is master of his work. He should also equally understand how to yoke the horses to the plough. If everything is not properly adjusted, the work cannot be well done, with the least exertion to man and horse, however good the workman may be in other respects. To be careless in unnecessary labour, is to throw money away, and the farmer must look to this; of course it is necessary that he himself should be able both to understand a plough, and to hold it. Whenever I see a man labouring in his shirt at a plough, except in very hot weather, I conclude there is something wrong. To a good ploughman, who has a good plough, and everything properly adjusted, the work is easy.

I do not like the present make of Scotch ploughs for ley ploughing so well as Small's improved Scotch plough, for several reasons. It is more difficult to hold, and of course, heavier work for the horses. They also leave the solid ground under the furrows, *serated*, and the angles prevent the water getting into the open furrows or reins. On undrained heavy soils, this is a great evil.

In ploughing old grass for oats, the *depth* of the furrow must be two-thirds of the breadth, or the work will not be good. If *less*, the furrows will lie too flat; if *more*, they will stand too much on their edge, and there will be a great loss of seed. Some farmers are in favour of ploughing only four inches deep, as by this, a greater number of rows of corn will be grown in a given breadth than with deep ploughing, and of course, broader furrows. I should never, in any case, recommend less than six inches, but, of the two, should prefer eight inches deep. In this case, the furrows would be twelve inches broad, and of course, have only half the number of rows of corn upon a ridge, as he who ploughs only four inches deep. Old ley ploughed four inches deep, cannot produce much loose mould in harrowing, and what there is, is full of grass roots, and requires double the time for harrowing and

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ploughing, to that ploughed eight inches deep. The deeper old ley is ploughed, and the easier it is harrowed, the better the seed will be covered, and a less quantity will answer; there is also less risk of the grub and of drought, and more loose mould for the crop to grow in. It is not the greatest number of rows of corn in a field which produces the best crop, but where the plants are most vigorous, and clearest from the grass or weeds. To plough deep, in old ley, is quite as easy for the horses as shallow ploughing, because the ploughshare goes below the grass roots in the former case. The best crop of drilled wheat I ever saw, was drilled at twelve inches.

In ploughing old ley, in the autumn, intended for potatoes or turnips the following season, the common practice of ploughing as shallow as possible is quite right; but in this case, I should give the land another ploughing very deep, before the winter sets in, unless I intended to delve the land with the spade, and put the turf below.

When the ridges are *very high and broad*, in old ley, and a crop of oats is intended to be taken, the best way is to plough it into half ridges, as it is impossible to raise the ridges sufficiently by the common method of ploughing crown and furrow. This is common in Scotland upon stiff soils. The land is easier to plough, the water can get better off the land, and the crop will be better. In ploughing the land on this plan, the ploughman takes his first furrow on each side the ridge to the full depth, and eighteen inches from the side of the old furrows or reins. They will thus fall over to the side of the old furrows, but not into them.

Mr. Smith, of Deanston, recommends all land to be cultivated flat without open furrows; or with as few as possible, when it is thoroughly drained. But if he had farmed a stiff clay soil in Lancashire for twenty years, and paid a rent for it, he would not, I am satisfied, have done so, however well the land had been drained. I have drained clay land quite as well as he ever did, but still it would not be cultivated on the flat. It may do on light soils anywhere, and also on heavy

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ones perhaps in the *eastern* counties of England and Scotland, and also in the south of England, where far less rain falls, than in the western counties.

2nd.—Ploughing broken land for a crop of corn. Suppose the land a wheat stubble, and a stiff clay or strong loam, with the land in ridges, well raised. Suppose the succeeding crop to be barley or oats, and to be sown with clover and grass seeds.

It is of importance, in this case, that the ridges be well formed before the new crop or crops are sown. If the wheat ridges are not above five or six feet broad, three may be put together, which requires a little management to do the work well. The common plan is, to fallow the ridges down in the autumn with a thin furrow, throwing the furrows in such a way as to prepare the land for making three ridges into one, the spring following. This plan will make good work, if well executed. I recommend the wheat ridges to have a full deep ploughing, immediately after the crop is removed; and the ridges left of the same breadth, by merely reversing them. The soil will then receive the full benefit of the frost in winter, which is of great service to it. In March, when the soil is sufficiently dry, split every third ridge, and skim-plough the remaining ridges, throwing the soil of each towards where the crown of the new ridge is to be set. When the land is well harrowed, gather the ridge and half, on each side, into one ridge, by a clean deep furrow. The *breadth* of the furrow to be *no greater* than the *depth*. This will leave a well formed, well ploughed ridge.

If the wheat ridges are seven or eight feet broad, two thrown together are sufficient. In this case, I should give the land a full deep ploughing in the autumn, by reversing the ridges. In March following, skim or half plough each, throwing the soil of two ridges towards the furrows between them, where the crown of the new ridge is to be set. Harrow well, and gather the ridges as in the former case. In either case I should recommend not to skim-plough and harrow more in a morning than can be ploughed up the same day, because

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if rain should come, the soil will dry quicker when not disturbed. By my plan, the expense is one ploughing more than the common plan; but, I am satisfied, any one of the following crops will more than repay it twofold. If the land be a *light soil and dry*, ridges are unnecessary; but it is highly beneficial, to the following crops and the land, to be ploughed immediately after the removal of the wheat crop, and worked with the scarifier before winter, and one clean ploughing given before the Oats or Barley be sown.

3rd.—Fallowing. All suitable land intended for potatoes, turnips, beet, cabbage, beans, or plain summer fallow, should have a clean deep ploughing after harvest, and left in ridges all winter.

In the spring, let the ridges be well harrowed, and ploughed down by another clean deep ploughing, taking care that the ploughman never takes a furrow so wide, but that *every inch of soil be turned over to one uniform depth.* After this, with care never to go upon the land when out of condition as to moisture, no more ploughing will be required in preparing the land for the crop, if a proper use be made of the cultivator, the roller, and the harrow.

For a plain summer fallow, another ploughing or two will be necessary. One clean deep ploughing in dry weather is worth three bad ones in any weather. In all cases of fallowing, without the eye of the master, an unprincipled or careless ploughman will pay more attention to what is called "*blacking*" the land, than doing the work well, and will appear to have done a good day's work when it is not half done; and I am sorry to say that too many farmers pay more attention to the "blacking" system, than to real utility.

It is admitted by almost all men, who have paid attention to the cultivation of the land, that by the use of the spade, better crops have been produced, than by the plough. Now the only difference is, the spade goes deeper than the plough generally does, and goes to one uniform depth, leaving no part of the soil unmoved. A bad use of the plough has done more injury to farmers and the country, than any one thing

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connected with Agriculture. It has set landlords against the use of it, and has caused them to insert clauses in their agreements, and leases, which I believe never would have been inserted, and which are a curse to all active, honest, and intelligent farmers.

SOWING, DRILLING, AND PLANTING.

Grain or corn crops have been universally sown broadcast till within a few years back; drilling these crops is now gradually creeping into the country, both in North and South Lancashire. Wheat, oats, and barley, are generally drilled at six inches, I should prefer nine or twelve inches: this would afford more room for the hoe, which ought always to be used once. This however, is yet neglected in most instances. It is not the greatest number of rows of corn which makes the heaviest crop. The finest and best fed ears are what tell the best tale in the bushel. Drilling corn is not generally done here with a view of saving seed. There is often, in fact, nearly the same quantity used. The districts in which it is chiefly practised, are around Liverpool, North, East, and South; the neighbourhood of Ormskirk, Scarisbrick, and Rufford; at Lytham, and in some other parts of the Fylde; also, on the banks of the Lune, and in the neighbourhood of Catmal and Furness. It is not general, even in these districts. Beans are drilled at from eighteen to thirty-six inches. The latter distance, where it is the intention of superseding a plain fallow.

Potatoes are planted in drills all over Lancashire, except in the neighbourhood of Warrington, Newton-le-willows, Ashton, Wigan, and Leigh. In these districts, Turnips, and Mangel wurzel, are sown, or planted generally in drills, except the yellow turnips sown after a crop of early potatoes. The drilling of these was first introduced about the year 1812. I was the first who drilled turnips in my native parish. This was in 1813. I was also the first, in that parish, who cultivated swedish turnips and mangel wurzel in any way. This was in 1816. In that year I sold £120 worth of turnips off [illegible] statute measure. I sold them at 40s. per ton,

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the purchasers carting them from the field. There were none in the neighbourhood besides these. Drilling of root crops gained little ground for 20 years after the above period.

QUANTITY OF SEED.

Corn, except in the districts before named, and perhaps on a few individual farms in other districts, is still grown broadcast, and the quantity of seed used varies little anywhere. On good, bad, and indifferent land, the same quantity is generally used. Some few sow thicker, and a few thinner, than the usual quantity, and these are frequently disputing the point as to the benefit of their own customs. It is easy to tell upon what quality of soil each disputant lives. The general quantity of wheat is from two, to two and a half bushels; barley, about three bushels; and oats, about five bushels. Those who sow only red clover and ryegrass, sow from ten to twelve lbs. of the former, and a quarter of a bushel of the latter. But the best cultivators of artificial grasses never sow these alone. They sow a mixture of all the trefoils with ribgrass, (an equal weight of each,) about four lbs. with one bushel of perennial ryegrass. These farmers never have any failures in their new grass fields. I have seen two instances of dibbling wheat near Southport, and in both, the rising crops looked well, and the cultivator spoke favourably of the practise. I tried it myself in the year 1817, part of the crop did well, and the other part did not, but the broadcast crops on the same field, in the same season, did the same. It was an old grass field ploughed up, and oats dibbled on one half the field, in the centre of the furrows, the other part being sown broadcast. The soil on which the best crops grew was a good sandy loam, and perfectly dry. The other part was a light, peaty, poor soil. On this part, the grub made great destruction in both the dibbled and broadcast crops.

I shall here offer the following remarks on thick and thin sowing, arising from my own experience.

I cultivated a farm for nearly thirty years, which lies three

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hundred feet above the level of the sea. The soil is various, some sandy, some gravelly, stiff clay, loam, and some bog. There are few fields all of one nature throughout; some of the fields contain land of each of the above descriptions.

When I began to farm, I was quite inclined to thin sowing because I had seen very good crops from a little seed. But after a number of years' experience and observation, I found that in certain cases, and in certain seasons, very good, or better crops, might be got from thin sowing than by thick. Yet, as a general rule, for all seasons and all soils, it is a very dangerous practice. Perhaps in one case out of twenty, thin sowing would answer better than thick. If the season has been a good one for preparing the land and sowing the seed, and if the land has been sufficiently drained, if wet, and in proper condition as to manure, then a less quantity of seed will often produce a better crop, than if thicker sown.

A farmer must use common sense in sowing. If the seed be the produce of a fine season, less will be required, than if the produce of a bad one. A farmer, in sowing, must have an eye to his *seed*, the *land*, and the *season*. I found it the height of folly to make a rule as to the quantity of seed in every case. I was generally my own seedsman, and I varied the quantity in the same season, and in the same field, according as the natures of the soil varied in depth and texture. On very light sandy or gravelly soils, I should never recommend thin sowing. If the spring months be dry, there will be sure to be a thin crop. On stiff clays, thin sowing is very dangerous. It is only under the most favourable circumstances, both at the seed time, and in the season which follows, that thin sowing, on such soils, will answer better than thick. A well prepared summer fallow, sown with wheat in September or October, will require far less seed, than if sown in December or January. Land which is not naturally dry, or not made so by draining, will require more seed than if dry, excepting very light sandy or gravelly land, as before stated. Neither thick nor thin sowing will ensure a good crop, if the land be out of condition as respects want of

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manure, shortness of tillage, or too much water in it, and too many weeds. Then again, if the land be *naturally bad*, although the farmer may have done every justice to it in his power, and every thing which man can do, more seed must be given than when the soil is *naturally good*. Some men will perhaps say all land may be made good. This I do not believe; and if it could, would it pay?

A farmer on good land may safely use less seed than upon bad land, supposing the management equal. A *good farmer* may safely use less seed than the *bad one* on the same description of land. Elevation and exposure must be considered in the quantity of seed given. In short, no rule can be given as to quantity of seed sown, which will apply to every case. I have been very often surprised to see farmers using the same quantity of seed when the season is very *favourable*, as when very *unfavourable*.

Thin sowing will often produce a fine crop as to bulk, both in straw and grain; but is very uneven in ripeness, and the sample of grain is generally coarse and of less value. When every grain of seed can be put at its proper depth, and at perfectly regular distances, in a good clean soil, by dibbling, or by a good drill, then a far less quantity of seed will be sufficient than when sown broadcast. But upon the *strong soils* of Lancashire, there is scarcely one season in seven, that a drill machine could work to advantage in the autumn months. Our climate is too moist. The strong land farmer in the eastern, midland, and southern counties, knows nothing of the difficulties we have to contend with.

DRAINING AND SUBSOILING.

As draining is now become so common, it is a subject that is much discussed; and the different points of depth, distance, direction, and materials to be used, are matters on which there is great difference of opinion. There is the deep, the shallow, and the frequent system. Then there is the broken stone, the open tile, the pipe tile with a porous substance above it, and the pipe tile laid in puddle, or puddle

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around it. These have all their advocates, and every man considers his favourite system the best for every part of the world.

The best system of draining is that which will make the most *effectual drainage* at the *smallest expense.* One system may be the best in one situation, but not so in another. The best depth, the best distance, the best direction, and the best kind of materials, will depend on the nature of the subsoil; and how that subsoil lies, and also, on the inclination of the surface.

If the subsoil or strata lie in sheets, at an angle to the surface, (see section second,) it will perhaps make the most perfect drainage by the drains being made up the incline; and if the incline be very steep, to be filled twelve inches with broken stones, cinders, or coarse gravel, to prevent the bottom washing. But where the incline is small, open tile is the best. Where the fall is *very little*, broken stone, &c., should never be used. Such drains, in our coal districts, would not run twelve months, even where there was a tolerable incline. They would be choked with what we call carr.

If a clay subsoil be full of *sand cracks*, both perpendicular and lateral, it will make little difference in what direction the drains are taken, provided each has a gentle fall into the main drains. If the land had little slope, I should take them *up the incline*; but, if the incline was considerable, I should take them *across it*, giving them sufficient fall into the main. Where the clay is of this description, the drains may be made four or five feet deep; the deeper they are made, the fewer will be required. If the clay be very compact and adhesive, the drains must not be cut more than ten feet distant, and it is useless going deeper than from twenty-seven to thirty inches. In some land below the cultivated soil, there is a layer of clay two or three feet deep, and below that, a bed of *sand or gravel.* If this clay be full of *sand cracks*, the drains may be sunk *through the clay* to any convenient depth, so as to secure a fall; and in this case, fewer drains will be required; but, where the clay is *void of sand cracks*, it will

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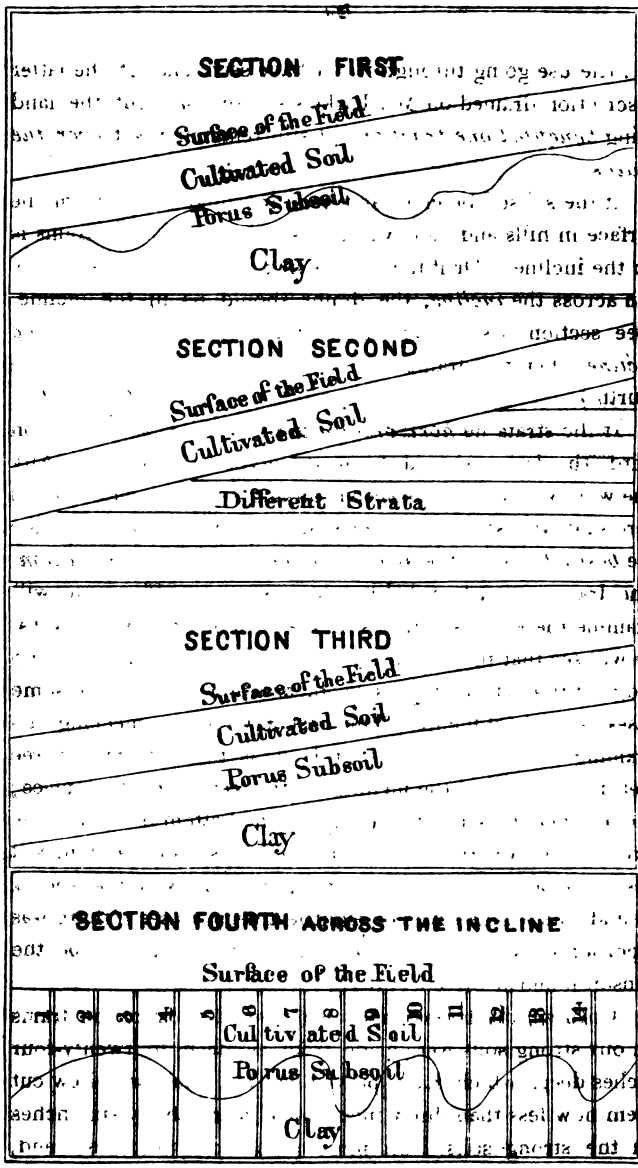

x With drains up the incline as the Strata lies in Section Fourth Nos 5.8.11. will have good effect. Nos 1.4.6.12. will have moderate effect. Nos 2.3.7.9.10.13. will have little effect.

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be little use going through it. I have seen land of the latter description drained on Mr. Parke's system, without the land being *benefited one fraction;* it still remaining wet *over the drains.*

If the subsoil be clay, and lie at irregular depths from the surface in hills and hollows, the safest direction of drains is up the incline. Or if the clay lie in ridges, and those ridges run across the *incline*, the drains should be up the incline. (See section first.) But if the ridges of clay run *up the incline*, then the drains should run *across* it. (See section fourth.)

If the strata lie *horizontally* to the surface, as in section third, the drains should be made *across* the incline. Any one who will study the accompanying sections, and what is here said, will see that no *one system* of draining will produce the *best effects*, at the *smallest expense*, in *every situation.* The drainer must be ruled by circumstances. If any one will examine the various cuttings on the various lines of Railways, he will see that the sketches I have made are not fanciful. To judge of the nature of the subsoil, and how it lies, is in some cases, a little difficult. The best way, in commencing the draining of a field, or piece of land, is to cut a drain, three feet deep, right up the incline, in the centre of that piece; and another the same depth, across the bottom of the incline. From these, a perfect knowledge of the subsoil, and how it lies, may be obtained. On some part or parts of the land, I should sink a hole seven or eight feet deep, to see if there was a porous substance below the first bed of clay, if clay be the subsoil found at three feet deep.

Until within the last eight or ten years, most of the drains on our strong soils were made from eighteen to twenty-four inches deep, which have proved far too shallow. Few cut them now less than thirty inches, and many thirty-six inches on the strong soils. On more porus soils, or moss land, deeper still.

Subsoiling is practised by a few, but it is far from being common. It is, however, getting every year more into prac-

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tise. If the land be wet, and the subsoil clay, it should be drained twelve months before; and, on stiff soils, should never be done in wet weather.

IRRIGATION.

Water meadows are irrigated, but here the water naturally flows over them at flood time; or, where there are embankments, it can be turned over them at such times. But, under this head, I mean *artificial* irrigation, when the water is conveyed from higher land, or diverted from rivers, brooks, or other streams, and by grips made to flow over the surface of grass land, and taken off again at a lower level. There are few districts in the county, but in which this is practised more or less. In some districts, by some farmers, the *true principles* of irrigation are little understood. These have an idea, that the water, when turned upon the land, should lie upon it for several days, and in some instances, I have seen it lie weeks, before it was allowed to run off. Of course this is where the land is perfectly level. The results were, *little benefit* in some instances, and *great injury* in others. The true principle of irrigation is, that the water should flow *very gently* over it, but *never stand* upon it.

This description of irrigation is best carried out in the vales and on the hill sides, adjoining the higher branches of the river Irwell, north of Bury, up to Haslingden on one branch, to above Rawtenstall on another branch; and through Rosendale to above Bacup, on the main or principal channel. Also on the higher branches of the river Roach above Rochdale, and on the small streams between Todmorden and Burnley. In these localities, great attention is paid to this mode of fertilizing the land, and very early and abundant crops of superior hay are every season produced. Often cut the latter end of May or early in June, and frequently two or three crops in a season. But even in these districts more might be done by catch work, and turning it over their pastures. The principle is entirely applied to their meadows. There are few localities but in which more of this mode of

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improving the land might be introduced; and in the hilly and undulating districts, at a very trifling expense.

ARTIFICIAL MANURE.

Some years ago, we were going to deluge the country with grain, grass, and roots, by the application of artificial manures. Farm yard manure was considered almost worthless. We were going to carry tons of produce from our fields by only applying pounds of manure. One would have supposed that no man of common sense would have believed all that was said on their virtues and powers. Most of these have sunk into oblivion. Guano, as an exception, still holds on, being of more real use than most of the others. It is a stimulant, and like all stimulants, whether to the body or to the land, it is exceedingly useful for certain purposes, and in certain cases, but would no more answer to be repeatedly applied to the same land, without other manures, than lime would. In Lancashire, it is principally applied to the turnip crop along with other manure, or as a top dressing to clover or wheat. To grain, it has a tendency more to feed the straw than the corn.

LIME AND MARL.

Thirty or forty years ago, lime was far more used by the farmers than at present. It was then little understood; for, although a first application was found beneficial, repeated applications on the same land, produced no effect. And, at that time, there was little land sufficiently dry, to produce the best effect. There was also a notion existing amongst potato cultivators, that lime produced the scab in that root. Lime in any case, is slow in acting upon soil, and in producing any visible effect on crops; it, consequently, does not suit the present race of steam power farmers.

In 1813, I began farming with a prejudice against lime, because I saw no effect produced from it on *some fields*, and from no other reason than its having been *repeatedly* applied

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to those fields, without any other manure between the applications. But after nearly forty years' experience, and study of the nature of soils, and the results of different experiments, I am quite convinced that land in this county *will not do what it is capable of doing*, without occasionally a dressing of lime. I consider it after the way of medicine to man. It causes the soil to produce more healthy crops, and makes other manure act with a better effect. If a man be restored to health by medicine, he does not think of living on it, he returns to his roast beef again, if he can get it. So it is with land; it requires farm yard, or other manures, applying between the dressings of lime. Lime does not so much increase the bulk of a crop, as the quality. Lime makes grain more plump, of better colour, and thinner skinned. Hay and pasture will produce more butter and cheese from the same number of cattle, and more beef and mutton from the same extent of land. At present, it is little used, except in, or near the limestone districts, but my most decided opinion is, that farming *cannot be carried on in perfection* without its use, or, that of marl.

What has been said of lime producing scab in the potato, is not true, according to my experience. The farmers in Scotland generally apply lime to that crop. Theorists say, that lime should always be applied to land in a quick state, and that when in a dead state, it looses its virtues. I have tried many experiments with it, and I must say, that this theory is not correct. I have found it to answer equally well even when applied in a miry state; but I prefer it better when in a state resembling that of oat meal. I have seen old lime mortar taken from an old building and applied to moor land, which has made that land produce a thick carpet of white clover; when before, there was nothing but heath. It took three or four years to complete this change.

Lime once in twenty years is sufficient upon strong land, and once in ten or twelve years on light land; but strong land requires a greater quantity to improve it, than light land. For arable purposes, I should apply it to that land intended

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for turnips or potatoes, in the month of March or April, and fallow it in, and then give the turnips or potatoes near the usual quantity of manure in the drills.

In the Fylde district, marl has been much used until within the last few years. It is still used there, but not so extensively. On sand lands, or bog soils, nothing can equal it for a dressing now and then; but on strong soils, I prefer lime. Marling makes bad work with land, in making pits, and, in every way of conveying it, temporary railways should be used.

BONE MANURE.

This manure was first used in this county about seventy years ago, by a Mr. Mayors, in the township of Ashworth, near Rochdale. He used it very extensively on a high lying, strong soiled, undulated farm, and applied it entirely to grass land. The effect, in this instance, was astonishing. I can recollect when a boy, twenty years after the application, seeing the land always green, both winter and summer, if the snow was off the land. Since then, the land has been misused by the Grandson of the improver, whose morals had been ruined by the extraordinary profits derived from the boned land. He soon began to draw largely from his bank, the land. The sums which he drew from it, in the shape of corn and hay crops, without making any fresh deposits, were truly astonishing. Some fields he cropped with oats, ten or twelve years in succession, and the latter ones were very fair crops. One field which had been cropped more than the rest, I walked over when the last crop was in reaping, and I could not tell whether there were more thistle or corn stalks; but, taking both together, there was a thick set crop, of from five to six feet high.

The bones put upon this land were raw, being ground coarse, and not put on sparingly. About fifty years ago, a gentleman moved the whole of a farm of sixty acres, lying alongside my father's farm, with bones in the same way, all applied to grass land; the effect was the same. Part of this

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farm was alluvial soil, lying on the banks of the river Roach, the remainder strong soil resting on clay.

At the present time there are considerable quantities of this manure used, some raw and some boiled, most of the latter, the price being only one half that of the raw, and it is found to act quicker, but will, of course, be spent sooner. But for pasture, I like it fully as well as the raw, taking the price into account; the effect on pasture is lasting, if a proper dressing be given—two tons per acre. Pasture land covered twenty years ago, at this rate, seems not to decline yet. It is very often used for turnips, and found to answer well both for those, and the following crops. It is also used as a top dressing for clover.

Chemists say that bone manure will act best on a light soil, but practise proves it to be just the reverse. Both in Lancashire and Cheshire, the greatest effect has always been on strong soils. My own experience says the same.

SOILING.

Soiling is partially practised in most parts of the county, but there are few farms on which the system is carried out systematically with the entire stock. In the keeping of work horses, there are few but what follow this system. Before this can become anything like general in this county, there will have to be a thorough reformation in the farm buildings and steadings, which at present are mostly unfit for the purpose.

It is carried out with the greatest spirit, and with the greatest success according to my views, by Joshua Knowles, Esq., of Stormer Hill, near Bury. I have partially practised it myself, and as there has been much written and said on the subject, I shall here give my opinion; and in doing so, it is my intention to state both the advantages and disadvantages of the system; to weigh both in the scales of justice, and show the balance.

One advantage is, that more stock can be kept on the same land; but in making comparisons, the advocates of soiling

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seldom state the circumstances fairly. They generally compare the produce of a poor pasture with the same extent of highly cultivated land, which is very unfair. What could a farmer do with soiling his stock from nothing but poor grass land? Before soiling can be commenced, the land must be put into a productive state; and the fact that pasture land put in high condition will keep more stock than if poor, is plain to every man; but the comparison can only be fair where the land, in both cases, is in the same condition. However, I am satisfied that where the condition of the land is the same, a third or a half more stock may be kept by soiling.

Stall feeders say, that stock kept in the stall, will *feed faster*, and *milk better*, than when at pasture; this will depend upon circumstances. In *hot, or cold and rainy* weather, this is true; but in *mild, temperate* weather, it is *not true*, if other circumstances are the same. And here again, the stall feeders, or rather I should say, theorists, do not state things fairly. If a cow be kept on clover in the stall a week, and then on pasture a week, to try the difference in her produce, she ought to pasture in clover, and not on a piece of poor pasture; and, *in this case*, the experiment would not be fair, except the *weather* was the same in both cases. For cattle to run out of doors in the *winter season* is folly, to say the least of it, if the land be clay, clay loam, or a black soil. If the pasture be dry and sandy, there can be no harm in the cattle going out a little in the middle of the day. Cattle turned upon strong land in the winter, is of no use to them, and they do injury to it for the succeeding summer.

By soiling stock in summer, a far greater heap of manure is made in the course of the year. This is considered by soilers to be one of their great guns in argument, and yet it is the weakest, or one of the weakest arguments they make use of. It is quite true, a *far greater quantity* of manure is made by soiling stock, than by *pasturing it;* but then, *more is required.* If the produce be carted off a field to the farm yard, the manure made from that produce, together with the

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urine, must be carted *on to that field again*, or the field must be *poorer than it was*. If cattle pasture the produce of a field, both the dung and urine are left upon it, and the field remains in the same state of fertility, or poverty, in which it was before the pasturing commenced, unless the land be *naturally a very bad soil*. Land which is a deep rich soil, will improve in richness by pasturing, but will never do so by mowing or ploughing, except the produce be returned to it in the shape of manure, solid and liquid. If a stall feeder purchase a great quantity of provender for his stock, he will enrich his farm more if all the manure and urine be applied to it, than if pastured and no provender given to the cattle. But in making a comparison, this would be unfair, except manure was purchased to put upon the land pastured. It is said, that manure and urine dropped upon the land by cattle pasturing, do little good: this is not true. Why do landowners tie their tenants to have a certain portion of their farms in pasture? Why, from the well known fact that pasturing land does not impoverish it. To manage pasture land in the best style, it should first be put in good condition, and made dry; it then requires a little care every year, to pull up any weeds which may grow in it, and keep the droppings properly spread. If a farmer be *too careless* or *too indolent* to do this, he would be completely unfit for a stall feeder. He would make sad work in that system, for he would waste his cattle food, their dung and urine, and, consequently, the land and himself would soon be brought to poverty.

A careless or indolent man should never be a stall feeder. It may be asked, why are there so many poor pastures in the country? Because they are made so by ploughing and mowing, before they are laid down to pasture.

Mr. Lawrence, a great writer on agriculture, in advocating this system, and in combating the argument that pasturing does not impoverish land, and that moving does, asks this question, "Whether there be some *charm* in the *mouth* of a cow?" Now, if Mr. Lawrence had been a practical man, he would have known that the *charm* lay elsewhere. He

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would also have known that it is not *mowing* a field that makes it *poor*, but carting the produce off the field after it is mown. If the manure made from that produce be spread upon the field again, then the field is in the same state of fertility as before it was mown, or as it would have been if it had been pastured. It is quite clear, that the extra quantity of manure made by soiling is required by the land, and of course no profit arises from that.

In pasturing *feeding stock*, they are driven to the field and remain there till fat. They feed themselves, and leave their manure and urine on the land. In this there is little expense. In stall feeding, the food has to be cut and carted from the field to the yard, and the dung carted back and spread upon the field. This, including the attendance of the cattle in feeding and cleaning them, in paying attention to the manure and urine, and in loading the manure, &c., is a considerable expense, which has to be paid for, from the *profit of keeping more stock* upon the same land.

In a *milking stock*, the difference of expense is not so great between pasturing and soiling, as in a feeding stock; because in pasturing a milk stock, they have to be driven *from* the field to the farm yard twice every day; or the milkers will have to go to the field twice every day, and carry their milk home to the dairy. In either case, the expense of labour will be about half the cost of carting the food to the cattle.

In a *feeding stock pasturing*, there is no wear and tear of roads in driving stock twice a day to or from the field. In a milk stock there is, except they are milked in the field, and there is always great inconvenience in this.

In stall feeding stock there is great wear and tear of roads in carting the manure to the field, and the food from it, particularly if the weather be wet; and in Lancashire we have too much of this sort of weather.

In pasturing strong loams, stiff clays, and peaty soils, in *wet weather*, great damage is done to the grass by *treading*; but there is also great damage done to this land, in such

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weather, by *carting* the produce in a green state from it. In stall feeding, the food should be brought fresh cut to the cattle twice every day; therefore, the horse and cart will have to go twice upon the field every day, to the place where the food is cut. It will not do to carry it to the gate, and it would never do for a stall feeder, except he makes up his mind to raise good crops. Labour, seeds, &c., would eat up the value of light crops. I will suppose a good crop of clover to be carted home green to cattle; the weight will be ten or twelve tons upon a statute acre; this would make twenty or twenty-four journies, perhaps, upon every acre, with a horse and cart; and if the stock soiled were few, the number of journies would be greater. It will thus be clearly seen, that on the above description of land, *in wet weather*, the damage by carting must be great. Almost every writer on soiling overlooks this, and yet they can write on the damage done by pasturing such land in wet weather. We are not yet got to that perfection in the arts as to be able to remove our crops from our fields in balloons. In a few years, perhaps we shall be. "Agriculture," it is said, "is only yet in its infancy." It was so when I was a boy, fifty years ago.

One advantage of stall feeding is, that the cattle never get into *mischief*, if there be proper conveniences at home in the yards and stalls; and without these conveniences, the system will not answer. Another advantage is, there requires *few fences upon a farm;* of course, the expense of keeping them in repair is done away with; the land they take up applied to better purposes; and that, for a couple of yards on each side of the removed fences, made of more value. But, will the landowners allow the fences and hedge row timber to be grubbed up? Game preserving and stall feeding will never do together. When the land is continually under the plough, as it must be under a proper system of stall feeding, except occasionally, when in clover, it will never do to have *small fields* and *crooked fences*.

If a farm be very large, it necessarily follows that some parts of the land will be a considerable distance from the

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farm yard, and will, of course, increase the expense of carting food and manure. A small farm will have the advantage over a large one in this respect.

Under a complete system of stall feeding, the horse and manual labour is very great; and to carry it out to the best advantage, the farm house and outbuildings should be convenient and extensive. They should be situated in the centre of the farm, whether in a large or small one, with good roads from the yard to every field or part of the farm. Whatever part falls short of this, adds to the expense of carrying on the system, and not for one year, but every year. Where the soil is very thin, and the subsoil very bad, or where the surface of the land is very hilly, stall feeding, as a general system, never can or will pay the expense.

Two very great advantages of stall feeding are, the finding of more labour for the working classes, and raising more food for man from the same extent of land. These are two very great and important considerations. Every farmer, before he commences the system, must consider his circumstances—the soil he has to work upon—the state it is in—the climate he has to contend with—the prejudice of his landlord as to ploughing up old grass—and the number of game to be kept. I have no doubt, but as the population increases, stall feeding will, and must be extended. But before it can be extended very much to the advantage of farmers, there must be a reformation in landowners' opinions on many points; a reformation in the habits of farmers, in their general intelligence; and a complete reformation in farms and farm buildings.

Stall feeding requires the constant attention of the master. An attentive, humane, good tempered servant, who has the care of cattle, in any case, is invaluable; but more particularly so in stall feeding, as the cattle are then always under his care. Great loss may arise from giving too much food at once, or from neglect in giving it in proper time. A hasty tempered man should never be intrusted with the management of cattle.

It will here be seen, that weighing the advantages and

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disadvantages of the system, is a very difficult task, if we desire to come to a correct conclusion. I shall therefore conclude by giving my general opinion, leaving each one to calculate the odds for himself.

On small farms of from two to twenty-five or thirty statute acres, I have no doubt of its advantage, if the land be of fair quality, and not hilly; likewise dry, or can be made so. Upon a middle sized farm, if the land be good and dry, lies convenient to the farm buildings, not too hilly, and the *stock kept a milking one*, I should say the advantages were in favour of stall feeding. If the soil was a stiff clay, or very hilly, or the farm very large, or lay very inconvenient, I should not recommend stall feeding cattle at all, and particularly if a *feeding stock*. In every case, I should recommend work horses to be fed in the stall. To conclude, I would recommend no farmer, whether his farm be great or small, to adopt stall feeding, except he be industrious and persevering, having a full determination, and the power to do full justice to the land and the stock.

DAIRY, MILKING, AND FEEDING STOCK.

A considerable quantity of the produce of both North and South Lancashire is consumed by dairy stock. The produce from this stock, if kept within a few miles of the large towns, or in populous districts, is sold there; but, if at a greater distance, it is converted into cheese. The difference in the management of the cows in these two modes of dairying is considerable, and will show that the *milk seller* is at considerably more expense in the conducting of his business, than the *cheese maker*.

The milk seller has to keep a regular supply of milk, both winter and summer; and, consequently, he has to feed very highly in the winter, and to purchase, or grow, a large quantity of good provender. When a cow declines much in her milk, or is not calving at a time to keep up the regular supply,

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she must be sold, and a calver bought in her place; by this change, five or six pounds go out of his pocket. Some milk-selling farmers keep their stock in such a way that the cows are always fat, and they never put them to the bull. In this case, they are milked so long as they pay for their keep, and are then sold to the butcher, and calvers bought in their place; also, if any accident happen to a cow, she is immediately killed and sold, which is considered to be the most profitable way. The milk-selling farmers have, when at a distance from the town, to rise at three or four o'clock in the morning, in order to see, and assist in milking, so that the milk can get to the town in time for breakfast. The milking has, of course, to commence at the same time in the afternoon, and this early milking is the cause of some extra expense. Then there is a *mischievous boy*, with a horse and cart, to go to town twice every day, throughout the year, causing frequent break-downs in both cart and harness, laming the horse, shedding the milk, and very often, running over either one person or another.

Some milk sellers skim their milk, and churn the cream and drippings, (the last pint from each cow.) The skim-milk and butter-milk are sent to town once a day, and the butter once a week, consequently, these farmers need not milk so early. Another description of milk sellers churn all the milk, and take the butter and butter-milk twice a week to the town.

The cheese makers contrive to have their cows calving in spring, and milk them nine or ten months. They are thus dry, or nearly so, during the winter months, in which case, turnips and straw make good winter food. On such farms, twenty years ago, it was the custom to let the cows go out in the day time all winter, poaching the grass land, and spoiling it for half the following summer; often standing at the gate for hours, up to the fetlock in clay, and having only straw to eat when in the shippon. In the spring, some had not strength to go through calving, while others were spoiled for making a good season. There are very few, at this time, who follow this practice; yet, there are too many who keep their

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cattle too low in the winter, thereby suffering considerable loss.

I recommend the following mode of managing a milk stock, the principles of which are followed by the best milk selling farmers. Curry and wisp the cattle once a day, give water twice a day, when in the stall, and an hour's airing in the yard. Let the food be given to them at exactly the same hour every day, and likewise the water. When food is given, and any cow does not take to it readily, take it from her, and let her be without any until the next feeding time; (this is the way man should do, to remain in health.) Never pamper immediately after calving. At milking time, the master or mistress should assist, or be present, in order to see that the milkers milk *briskly*, and without *talking*. A great deal depends on these two points. A milker may *sing* or *whistle*, but not *talk*, but then, it must be tuneable. There is an old saying, that the *last drop is the richest*, and should be drawn. This is wrong, for the *last drop from a good milker* never does come. I have seen milkers pulling at the udder for the "*last drop*," while a weakly constituted cow has been nearly sick. A mother, who has suckled children, can understand this, and yet I have known thoughtless mothers to forget it when milking cows. In dripping a cow, a milker finishes with his right hand, by taking the teats in rotation, and getting what he can out; and when he gets hold of a teat, if he can get milk *twice*, he must try that teat again, after he has gone them round; but if he can only get milk once, he should give up, for the *last drop which ought to be taken* is then come: and if more after this is got, it is a pull upon the milk veins, and is no richer than milk taken at the first, or rather, it is of an average quality. If a milk farmer intend to follow his business to the best advantage either he or his wife, must milk themselves, or be present during the time of milking. One of the best managers I am acquainted with, always did the dripping himself, and left the others to do the regular milking.

The proper temperature for a dairy, where butter is made,

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will be from fifty to sixty degrees, according to the temperature of the weather. There should be plenty of air circulating through it. If it be *too warm* where the cream stands, it will lift in the cream mug, and the butter will be *rancid;* and if it be *too cold*, the cream will not get sufficiently acid for churning in *proper time*; in this case, the butter will have what we call a *bingey taste*. Bad dairyers to insure good butter, will churn the cream before it is *acid*, but this is a waste of labour, inasmuch as the cream, in this case, must be churned *until it is acid*, before the butter will separate from the milk. When churning commences, the cream should be at from sixty-two to sixty-eight degrees, according to the temperature of the weather, or of the room. No water should ever be used about butter in making up, as water left in butter is just a bad as milk, and it will soon make the butter bad. Nothing but *labour*, by working the butter, will produce real solid *sweet butter*, and make it *keep sweet*.

The following is a statement for eight years, previous to 1840, of the stock, produce, &c., of a dairy farm in the neighbourhood of Rochdale. The farm is on the mixed system of dairying, that is, part of the milk is sold in the new, part skimmed, the cream being churned, and the skim-milk and butter-milk sold as well as the butter.

Year	No. of Cows kept.	Quantity of Butter produced.	Quantity of New Milk sold.	Value of Butter sold.			Value of Milk sold.			Total value of Produce.			Average produce of each Cow.		
		lbs.	Quarts	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
1833	28	6608	5334	359	16	2	345	8	5	705	4	7	25	3	8¾
1834	28	6695	6890	364	10	5	347	13	9	712	4	2	25	8	8
1835	27	6733	7735	366	11	7	328	5	11	694	17	6	25	14	7¼
1836	25	6112	9380	357	15	8	353	2	0	710	17	8	28	8	8½
1837	25	6010	11396	376	5	0	334	19	10	711	4	10	28	8	11¾
1838	24	5929	9391	347	2	2	340	4	10	687	7	0	28	11	1¼
1839	25	5618	4743	328	19	4	313	13	1	642	12	5	25	14	1¼
1840	23	5530	2444	346	5	0	371	5	11	717	10	11	31	3	11½

In addition to the above, there were about one hundred and fifty pounds of butter, and one thousand quarts of milk annually consumed in the house; value about £15. The

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cows were kept on pasture in the summer, with about one quarter bushel of grains each daily; in the winter on hay, potatoes, turnips, and grains, with bean flour or oat meal. On an average, eleven cows were changed, (bought and sold,) every year, at about £6 loss for each cow changed. The farm was an entire grass farm, consequently, all the provender had to be purchased, and cost, on an average, £150 per year.

CATTLE.

There has been considerable improvement in the breeds of horned cattle since the date of last report, there being scarcely a long horn to be seen now.

The Agricultural Societies have been of great benefit in improving the stock, but in some instances, rather too much encouragement has been given to the larger breeds of cattle, which cannot be considered the most profitable for nearly four-fifths of this county. The land on the sea coast being too light and sandy, or peaty; and not sufficiently fertile for large cattle of any breed, and a great portion of the remainder of the county is too heavy, some parts mountainous, with a poor wet soil, and a weeping climate. There are but few districts, such as the rich lands on the banks of the rivers, or near a town, that large cattle can be found profitable, however good their milking qualities may be; of which the real improved short horns are generally deficient. The improved short horns invariably deteriorate when brought upon inferior land, without a continual importation from land of a superior description.

The general stock of the country are short horns of some description. Very few pure Durhams, but a cross with that breed and the Holderness, or Yorkshire cow, the Scot, or Ayrshire. A cross with the two last breeds is considered most profitable for the dairy farmer. They are good milkers, give good milk, and feed well after milking, In some of the backward districts, where the cultivation of the land is much the same as it was fifty years ago, there is a mixed race which

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it would be difficult to trace to any distinct breed or breeds. This is particularly the case amongst the smaller farmers; for when these men change a cow, they generally buy the lowest priced ones; if it be the shape of a cow, they seem satisfied; and if they breed their own, little attention is paid as to what kind of bull their cows are sent.

Near to all the manufacturing towns, raising milk is more profitable than breeding or grazing, consequently, the cows in these districts are bred in other parts of this county, or in Yorkshire. In some districts, the welsh cow is found to be the most profitable; as where the land is thin skinned, poor, wet, or hilly, they will answer better than any other breed; consequently, in some of the eastern parts of the county, the welsh are almost the general stock kept. Two gentlemen in the neighbourhood of Bury, who occupied good, rich, low lying land, kept dairy stocks of this breed a long time, and maintained that they were more profitable than any other breed in their situation. The Ayrshire breed are kept as part or whole of the stock of some farmers, and are found profitable, particularly where butter is the object. On a clay soil, and in a low district, they are found to answer well, as not being so heavy, they do not, in pasturing, damage the land so much as the short horn. They are not so hardy as the welsh, and, of course, not so suitable for high exposed situations. I kept a stock of this breed many years, and in comparing the quality of their milk, I found that on an average, three quarts less milk from these, would produce a pound of butter than from the short horns. The beef of an Ayrshire cow, when well fed, is equal to that of a mountain Scot.

Some farmers buy Irish cows, and some of these are found to be good milkers, particularly the Kerry breed.

As I have before said, there are few real long horns to be seen, yet, in a very wet climate, I think they are not to be despised, if profit be expected, and proper attention be paid to breeding and feeding.

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HORSES.

In the western and southern parts of South Lancashire, the heavy cart breed of horses is the prevailing working stock of the farmer. In the eastern and more hilly parts of the southern division of the county, the farmers' stock is a sort of two-thirds of the heavy cart breed; but in North Lancashire, the farmers keep and breed half-bred blood horses for the work of the farm; some even more than half-bred. These horses are active, and possess good bone and muscle. They step away freely with the plough and harrow; and in the cart, will travel, upon a good road, at the rate of four miles an hour, with large loads. This is about twice the speed of the heavy breed. In the Fylde district, the farmers get high prices for some of their horses, for hunters, roadsters, or coach horses. I consider they are by far the most profitable breed for the farmer in any part of Lancashire.

For farming purposes, I would not have a *full bred cart horse if given to me*, providing I was bound to keep it.

SHEEP.

In South Lancashire, or at least in the low lands of this division, few breeding stocks of sheep are kept. There are some farmers and gentlemen who purchase ewes in the autumn, and put the ram to them; or they buy them in the spring in-lamb. In both cases the lambs are sold to the butcher when fat. The ewe is then fed, and sold in the autumn. Generally for this purpose, the Cheviot breed are purchased, that breed being found most profitable. Some few buy Leicesters, and some Irish, but the Cheviot is the most common in this district. Gentlemen, for their own table, prefer the black-faced Highland sheep, which they buy at three years old, and feed themselves. And, certainly, nothing can exceed this mutton. There are few South Downs kept. At Ashton-in-Mackerfield, Sir John Gerard keeps a breeding stock, which appear to do pretty well, but I conceive the soil to be too heavy for them. I think the Leicester or the

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Cheviot would be more profitable. John Greenall, Esq., of Myddleton House, near Warrington, has been successful with South Downs; but he is on a dry soil, and buys fresh ewes every year. There is also a flock kept at Bickerstaffe Hall, near Ormskirk. On the hills, in the eastern part of the southern division, the farmers have a hardy mountain breed, of a fair size, which make excellent mutton when fat; these are said to be quite equal to the Highland black-faced, and some gentlemen buy them in preference. They will get from sixteen to twenty pounds per quarter. The name given to them is the Haslingden breed. They are horned, and have grey faces. Their wool is quite as good in quality as the Cheviot, and produces fully as heavy a fleece.

In the northern division of the county, there are more breeding stocks kept, (mostly of the Leicester,) both on the low lands and on the hills.

I think if our light peaty and sandy soils were kept a few more years in grass between every course of cropping, and stocked with this breed, considerable profit would attend this practice. The stocks themselves would be profitable, the land would improve, would break up fresh, and produce heavier crops of roots and corn.

PIGS.

With respect to pigs, both in North and South Lancashire, there is generally as good a selection as can possibly be seen in most counties. They are principally a cross breed between the Chinese and Berkshire. Salford is particularly noted for its breed of pigs; sometimes they attain an enormous size.

The Royal English Agricultural Society, at its annual shows, does not produce a better, or more profitable breed of pigs, than are produced at our cattle shows in this county.

IMPLEMENTS.

Most of the implements used in other counties are becoming general, such as are found suitable for the soil and climate. Some have been introduced by individuals to a

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decided disadvantage, however serviceable they may be on such soils, and in those climates to which they may be more peculiarly adapted.

With respect to the plough, nothing more need be said, sufficient attention having been paid to it elsewhere; and with regard to its accompaniments, and other minor implements, such improvements have been effected, as to place them in a corresponding ratio, the detail of which cannot be considered necessary.

In South Lancashire, the carts used by the farmers are clumsy. Generally from seventeen cwt. to upwards of one ton in weight, unfit for any farm work except carting produce to market, and dung in return; notwithstanding, they are in common use on the land. In North Lancashire, the farmers universally use light single horse carts, and yet the custom cannot travel over the Ribble. There are a few native farmers who use the Scotch or Westmoreland carts, but, generally, these are confined to the north countrymen who have come to settle here on their own account, or as bailiffs. I like the Westmoreland carts best for every purpose on a farm.

Thrashing machines, both portable and fixed, are common; but where there are *less than fifteen acres of corn to thrash*, per annum, there is no profit attending them. Interest on the outlay and annual repairs, would pay for hand thrashing one half the corn, and would perhaps save some little in poor *lates*, by finding hand labour at a season when labour is scarce. So far as I have seen, the work is no better done by machines than by hand. On proper sized farms, they are beneficial.

IMPROVEMENTS.

No county in England is more in want of a reformation in the shape and size of its fields, or in the arrangements of its farms, farm houses, farm buildings, and occupation roads, than this. The fences and ditches are generally crooked, broad, and in a bad condition. There are a few districts and individual farms, where the old fences and ditches are

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kept in repair, and in other cases, where they have been reformed from ten to thirty years back; likewise, I am happy to say, that such reformations are now progressing in many districts.

At the present time, wherever I go, tile draining may be seen in progress, either on a small scale by individual tenants, or on a large scale by the landowners. It is the same with filling up old ditches and pits, levelling and grubbing up old fences, and planting new ones in straight lines; also, uniting several fields into one. In some instances, the tenants do this work at their own expense, with the exception of the landowners finding thorn quicks, with rails and posts for protection.

In Furness, the Earl of Burlington is an improving proprietor, and takes an active part in the details of any improvement in progress; also in the cultivation of the home farm, and in the management of the stock. The fences on his estate, and on the Crown lands, have undergone very important improvements within the last thirty years. On an average, the farms are larger on these properties, than in other parts of the county; but, with the exception of individual farms, I do not think the cultivation of the land much improved; that is, better crops are not raised. What are considered better rotations, are adopted, but not carried out with spirit. To a man not thoroughly practical, Low Furness would be considered as a whole, the best cultivated district in the county. The land is generally good, and a great extent naturally dry. The fences are excellent and straight, and the country is purely an agricultural one. These combined, give it a good appearance; but to test the real state of the cultivation of a district, the land must be walked over. As in other districts, there are a few good farmers, who have been named before. Defective cleaning and short manuring, are the principal evils in the management of the rest, arising perhaps, from a want of capital in some, and of energy in others. Earl Burlington has one or two tileries at work on his estate.

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The most extensive improver is the Earl of Derby. Within the last seven or eight years, upwards of six thousand acres have been drained on his Lancashire estates; with an expenditure of more than £30,000, including draining, opening water courses, filling up ditches, levelling and stubbing up old fences, and the formation of new ones. A very great deal has been done in the way of permanent improvements on his property in Halewood, Roby, Huyton, Knowsley, Rainford, and Bickerstaffe, both on the land and buildings; likewise, similar operations are now commenced, and are in general progression, upon his estates in the neighbourhood of Bury. Mr. Statter, his Lordship's Agent in the latter locality, takes a very active part in such improvements. A new water course has also been cut through his estates in the Fylde district, in order to open proper falls for drainage, which is now in general operation in that locality. This new cut at its outfall into the Wyre, near St. Michael's, is twelve feet wide at the bottom, eight feet deep, and the sides sloped at an angle of about thirty degrees. There is also here an embankment on each side, of about three feet high. This new cut, with its branches, will exceed four miles in length; of course, the depth and breadth are gradually less, as the distance increases from the outfall. Its cost was about £4,000. He is also rebuilding various farm steadings, and uniting several small farms into one, at various places in both North and South Lancashire. He has several tile works on his estate. All the draining and opening of water courses is done at his Lordship's expense. The men work in gangs, having each a superintendent, with a head manager over all, whose duty is to point out what is to be done, how it is to be done, and to keep the accounts connected with his department. Mr. Henrie, residing at Knowsley, has actively filled this situation for a number of years.

Thomas Clifton, Esq., at Lytham, in the Fylde, is the next extensive improver; having, I should suppose, been twenty years at work. He has also cut a new water course, for several miles through his estates, similar to that cut by

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the Earl of Derby, but not so broad at the top; consequently, the sides have a steeper slope, and in some places, they sometimes fall in. This cut has been of very essential service in draining a considerable portion of mossy land a few miles north of Lytham; and, to a great extent, of strong loamy land. It falls into the Ribble. All the water courses on this estate, for many miles around Lytham, are well kept in order. Draining has been going on, on this estate many years; but at first the drains were not cut so deep as they are at present, and, consequently, the effect was not so good. Lately, pipe tiles of two inches bore have been used. There is a tile works on the estate. Around Lytham, the country is quite changed in appearance; the improvements in the size and form of the fields, and in the conveniences of the public and occupation roads, are very great. Some years ago, the farm steadings in Clifton, on this estate, were all huddled together, so as to form a village of farm houses and out-buildings, which is common in the Fylde. They were all built of clay and wood, and covered with thatch. The land lay as inconvenient as possible; a field in one situation, and a field in another; some parts of each farm a mile or more from the village, or homestead. This state of things is reformed, or in the way of reformation, by remodelling the land, making several farms into one, with fields and roads to the new built farm steadings. The same has been done on other parts of the estate, and most of these new farms are occupied by Scotch farmers, who have had splendid houses erected for them. Mr. Clifton, in my opinion, has made two great mistakes. I should have selected a few of the most intelligent aud respectable of the old tenants on the estate, and have given them the choice of the new farms, and the same privileges which are given to the new comers. The old tenants, on the other parts of his estate, would sooner have followed the example of these men, than that of strangers; besides, there is yet considerable doubt in my mind, whether these Scotchmen will not change their system of farming in a few years. They are not adopting the best system, consid-

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ering the soil and climate, for making profit, and keeping the land fresh, and in good condition. The second mistake Mr. Clifton has made, is, in building the farm houses for these new tenants, on too large and expensive a scale, the outlay being great, from which there will be no return. It would take a tolerable fortune to furnish them, if done in the same style as they are built. A plain, substantial, and convenient house, is all that a farmer requires.

As a moss improver and cultivator, Thomas Robert Wilson Ffrance, Esq. stands one of the first for the *extent* of his improvements, and the most judicious and systematic way of carrying them out; the particulars of which are given under the head of "Moss Land." He is quite a practical man himself, in this branch of cultivation. When I was there, in February, 1849, he had from sixty to seventy men employed, whose work he inspected every day. He has also been at considerable expense in cutting a new water course, and opening out and improving an old one, with its branches. The average dimensions of the principal cut is twelve feet wide at the top, six feet at the bottom, and nine feet deep. All are kept clear of debris and weeds, so as to afford a clear run for the water, and a proper fall for the drainage of the land on each side. In such a low lying flat country as most part of the Fylde, it would be impossible for individual farmers to drain their farms effectually, in consequence of the difficulty in procuring sufficient fall for the water. This can only be done by the large proprietors, individually or jointly, making such open, clear water courses through the country, as those made by the Earl of Derby, Mr. Clifton, and Mr. Ffrance, of such a width and depth, and in such a direction, as to secure a free passage for the water in wet seasons, and a sufficient outfall for the lateral drainage. There is no part of England where the land will pay a better per centage for good drainage than the Fylde, as the soil is generally of good quality. There is also wanted, a general improvement in the cross roads throughout this district.

The Duke of Hamilton has been, and is still, a great

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improver; so far as regards reforming the shape and size of fields, and improving the fences on some parts of his estate. The new fences are trimmed to a wedge shape, about three feet broad at the bottom, and brought to a point at the top; being about four and a half feet high. They are planted on the Scotch plan, and are cut every year with a sharp edged hook; the whole being done at the expense of his Grace. He has also drained extensively, and continues to do so. These improvements are actively promoted by Mr. Lamb, his Grace's agent. A tile works has been erected on the estate, and an Agricultural Society has been established, for the benefit of his tenants.

Robert Gregge Hopwood, Esq., of Hopwood, whose estate was in as bad a state of cultivation a few years ago, as most in the county, is now rapidly improving his property, under the management of Mr. Dixon, his Agent. He commenced in the year 1846, and in one year he laid thirty-two lineal miles of drains with tiles, on slate soles, and with bricks and stone. Many miles of main drains have been laid, some cut to the depth of nine or ten feet, to obtain fall from a distance. These were laid with bricks and stone, being flagged at the top and bottom, with an opening of from nine to twelve inches square. A small tilery is on the estate; but in addition to the tiles and bricks made, 120,000 tiles were purchased between the winter of 1816, and the winter of 1848, with about 600 tons of stone. The depth of the ordinary drains is from two feet eight inches to five feet, according to the open or compressed nature of the soil. Nearly twenty miles of old fences have been levelled, and the old hedgwood stubbed up; and new fences have been made, where required, so as to improve the fields in form, and increase their size. From October, 1848, to February, 1849, the old cops of nine fields were destroyed; the fields being now altogether, and added to the park. From December, 1847, to May, 1848, sixty-six and a half tons of oak poles, of about four hundred yards to the ton, were purchased from the woods of Lord Wharncliffe; and these, with a vast length of timber from the

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estate, were used in railing off new fences. The whole estate contains about two thousand acres, and the home farm about four hundred acres. From April, 1846, to February, 1849, 5,200 tons of manure, and 1,312 tons of lime were purchased. The manure consisted of horse and cow dung, with butchers' garbage, pure night soil, and some portion of police manure from Manchester; the latter being applied to poor grass land. The night soil was brought in barrels from the cotton mills, and mixed with 1,900 cubic yards of bog soil, on the principle recommended in the Royal Agricultural Society's prize essay, "on making compost heaps," 1839, of which Mr. Dixon is the author. About twelve tons of bones were also purchased from the bone collectors in a manufacturing town. The lime, bones, and compost, have been applied to old neglected grass land, and the change produced is astonishing to people who have known the land previously to these improvements being commenced; suffice it to say, however, that the receipts for a portion used as public pasture were six times the amount in 1848, more than they were from the same surface in 1844.

The Earl of Wilton, of Heaton House, has, since his present agent, Mr. Hampson, came into power, made considerable improvements on some portions of his estate, in draining, eradicating old fences, planting new ones, and improving the shape and the size of the fields. The work of eradicating old fences, and planting new ones, is done by the tenants, the landlord finding thorn quicks and protection. The gates and posts on this estate, are nearly all new, and substantially made. The draining at this time is generally done at the expense of his Lordship; but, until lately, the work has been done by the tenants, he finding materials. The tiles are made on the estate, mostly of the horse-shoe open tiles, and laid on slate soles. The farm houses and outbuildings are generally good and convenient, having been mostly rebuilt within the last thirty years, under the late agent, Mr. Denham.

The Earl of Ellesmere is making considerable improve-

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ments on his estate at Worsley, in draining, planting, building new farm steadings, and improving others; also in remodelling fields, and improving the condition of the occupation roads. The tiles are made upon the estate.

Wilbraham Egerton, Esq., of Tatton Park, Cheshire, has made, and is at present making, very considerable improvements on his Lancashire property, in the townships of Burnage, Withington, Heaton Norris, Didsbury, Chorlton-cum-Hardy. &c., south of Manchester. He is draining and reforming the fields, and endeavouring to promote a better cultivation of the land. On some portions of this estate, the cultivation has been very defective, considering it is so near Manchester; but on some individual farms, the management has been rather superior. The late Mr. James Dean, of Barlow Hall, Chorlton, was the first to set the example of good farming, which is still followed up by his son, Mr. Samuel Dean, the present occupier of the same farm. The farm contains three hundred and seven acres.

Improvements on Mr. Egerton's property, in these townships, have been progressing a little, for a considerable length of time; and are now in more active operation, under the superintendence of Mr. Laverick. His estate in Ashworth, near Rochdale, is in a very materially worse state of cultivation, than at the date of last report. This is a high lying district, within a few miles of the top of the ridge of mountains dividing Lancashire from Yorkshire; some portions of it being one thousand feet above the level of the sea. But notwithstanding this, there is a fair thickness of good loamy soil on the surface of most of the estate, which would pay well for better cultivation. A portion of this property, forty years ago, was in an exceedingly productive state, through the agency, principally, of bone manure, as before stated in this report under that article.

Thomas Legh, Esq., of Lyme Hall, Cheshire, is improving his Lancashire estate, under the superintendence of his agent, Mr. Mercer, of Newton-le-Willows. Since Mr. Mercer came into office, he has been very active in, and is

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exceedingly desirous of, changing the face of the country *around the village of Newton*, and also, the appearance of the village itself. He has erected a very good tilery upon the estate, at which, various descriptions and sizes of tiles are made, adapted for every purpose, and every description of drainage. Soles for the open tiles are also manufactured at these works. About one thousand statute acres have been drained upon this estate within the last few years. In these operations, the labour is done by the tenants, the landlord finding materials; and a superintendent to conduct the work, is found by Mr. Legh. It is the same also with the new fences. The work of improving the farm buildings, farm steadings, and remodelling the farms, is steadily progressing. A Farmers' Club has been established, by which premiums are given for improvements, and good cultivation; likewise an Annual Cattle Show. There is also, an Annual Ploughing Match, on the estate, by the tenants. On this property, considerable attention is now being paid to the woodland; the agent taking great interest himself in the woods and plantations.

Sir John Gerard, Bart., New Hall, Ashton-in-Mackerfield, is improving a few farms on his estate, which he has in his own hands, by draining, reforming the fences, and rebuilding the houses and outbuildings; but on the other parts of his estate, little or nothing is yet being done in the way of improvement. There is also a Farmers' Club established, with an Annual Cattle, Flower, and Fruit Show, open to the farmers and cottage tenants of Sir John; in which Mr. Harriot, his agent, takes an active part.

John Greenall, Esq., Myddleton House, has drained the greatest part of his estate, which required it; and is also improving the buildings, fences, and the form of the fields. Southworth Holt Farm, on this estate, containing three hundred and forty-eight acres, has been very much improved in every respect, at the joint expense of Mr. Greenall, and the late spirited occupier, Mr. James Wilson, who had a lease of the farm. In four years ending 1841, ninety-eight miles of

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drains were made upon this farm. It is now looking and doing well.

Mr. Wilson has now engaged the Newton Park Farm, in the township of Newton, containing two hundred and ninety acres, on which he is now making some general improvements in the way of draining, and the remodelling of fields. In these improvements, Mr. Wilson has also the assistance, as in the other instance, of the owner, Meyrick Banks, Esq., of Winstanley Hall.

John Ireland Blackburne, Esq., of Hale Hall, has commenced the work of improvement. The Demesne Farm, in particular, is greatly improved; and is still progressing, under the management of Mr. Nixon, the gardener and farm bailiff. A report of the management will be found in the Appendix.

The property of Richard Watts, Esq., in Speke, has, within the last twenty years, been much improved under the superintendence of Mr. Mc. Farlane, his agent. A few of the best managed farms in Lancashire are on this estate. The number of the fields, on some of the farms, is reduced from between twenty and thirty, to from eight to twelve. The fences are excellent, and in straight lines. The work of draining and fencing has been done by the tenants, the landlord finding materials. The buildings on this property are good, commodious, and convenient.

The Earl of Sefton, of Croxton Park, has commenced the work of improvement on his estate, under the agency of Mr. Ledger; and on this estate are some of the most enterprising tenants that can be found elsewhere. The best farming, of the greatest extent in the county, is under his Lordship and Mr. Watts; and the best farmers under these gentlemen have embarked more capital than any other farmers in the county, on the same extent of land; the favourable results of which, both on themselves and their farms, can plainly be seen. The most substantial, commodious, and convenient farm houses, outbuildings, and cottages in Lancashire, are upon the Earl of Sefton's estate.

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Sir Thomas Hesketh, of Rufford, since he came into possession of his estate, has taken considerable interest in it, as also in the cultivation of the home farm. Draining is going on in various parts.

Charles Scarisbrick, Esq., of Scarisbrick, is also proceeding in the right direction in making permanent improvements. The general cultivation, on this property and the last, was the best in the county, thirty years ago. I do not think the tenant farmers, as a body, have fallen back much in their management, or made much advance; but they are now beaten by the Speke and Childwall farmers; and by a few on the Earl of Sefton's, and the Earl of Derby's properties.

The estates of Henry Bold Hoghton, Esq., in Bold, Parr, &c., have been little improved since last report, yet there are few estates more requiring it. They have lately been offered for sale, in lots, but very few lots were sold, the sale being spoiled by extravagant reserved bids. Draining has been commenced, on a few farms, and on Parr moss. Extensive, and *expensive*, farm buildings have been erected at the Old Hall Farm, but they are not convenient; yet common interest on the outlay will amount to as much, as, or more than what one half the farm is worth at a fair rent; some portions moreover of the old premises, being far superior for farming purposes than the new parts erected for the same purpose. The architect was not acquainted with the practical requirements of a farmer's homestead, and this, I am sorry to say, is but too often the case in the erection of new farm buildings at the present time.

Legh Keck, Esq. of Bank Hall, has drained considerable portions of his estate, both on moss land as well as on his strong soils; and has also made other improvements on his property. Some years ago. he did not drain so deep as he does at present, and on this land the drainage is not so good as on the deeper drained. He now goes a foot or eighteen inches deeper, when he can find a sufficient fall. On some parts of his estate, he is short of this, the country being flat and lying low.

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Colonel Rawstorne, of Penwortham, has commenced draining; but, in other respects, nothing important is being done in the way of improvement. The Colonel appears to me to be a better writer and talker, than a worker; as he does not exhibit a very good sample of cultivation on the land in his own occupation; he appearing to have a fault of never properly finishing whatever he commences to take in hand.

John Wilson Patten, Esq. has commenced what appears to be the order of the day, draining, on his estates in North Lancashire. Previously to this time, the drains have been made upon the wedge principle, and covered with dried turf, as before described; the farmers being paid for the work, and doing it when, and how they pleased. Now there is a superindendent to mark out the work and see it well done; and the drains are laid with one and a half inch pipe tiles.

Sir Robert Peel has drained all the enclosed land on his estate in Oswaldtwistle, within the last two years, on Mr. Parke's principles; but has done little more towards improving that property since. A general reformation of the fences, and buildings is required, and lime applied to the drained land.

James Simpson Esq. of Foxhill bank is the largest occupier under Sir Robert; having a lease of his premises. He has completely remodelled his farm, at his own expense, and cultivates it in a first rate style, both the arable and grass land. The climate is inferior. The soil on part of the farm is tolerably good; the remainder being but indifferent.

Various other properties of moderate extent, have undergone important permanent improvements; some of which are mentioned in other parts of this report. It would swell this report to too great an extent to particularize every instance in which the smaller proprietors and tenant farmers have effected such improvements; yet, I think it will not be out of place to bring forward a few as examples, having considerable merit due to them; and I therefore select those whose practice I have regularly been aquainted with, some for the last twenty or thirty years.

Mr. John Owen, of Lower House, West Derby, near

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Liverpool, together with his late father, were two of the first and most successful improvers in South Lancashire. At the time they were tenant farmers, under the Earl of Wilton, in the townships of Prestwich and Little Heaton, their farms exhibited two as good specimens of high and profitable cultivation; and of proper arrangement of the fields and general management of the farms, as can be shown in the best cultivated part of the Lothians. Both farms are of considerable size, and the cultivation was complete garden cultivation on a large scale. In their business they were two of the most indefatigable and industrious men I ever met with; frequently riding to market, getting their business done, and at home amongst their labourers soon after mid-day; not arriving at midnight, and unfit for any thing the next morning. Mr. Owen now lives upon, and farms his own estate; which he has completely and substantially improved, and remodelled; as will be seen from a report to be found in the appendix. He is the owner also of other considerable property.

Mr. James Kay, of Clifton, together with his father are two of the same class, known as first-rate agriculturists; and nearly as long standing as those first alluded to, both having met with similar results: independence, aquired by their own industry, and good cultivation. Not making a flourish for a few years, and giving up, or perhaps ruined.

On a medium extent, few have produced a greater change, on poor high lying land, than John and James Fenton, Esqs., Bankers, Rochdale, on their property, situate in Bamford. Messrs. Richard Tattershall and Brother, their neighbours, are nothing behind them, on property purchased and improved, by means realized from their own industry. Some portion of the land improved by these gentlemen, was a poor peaty thin soil, resting on a bad subsoil, and at a high elevation. At the present time it has the appearance of quite superior land; it is green through the winter, when there is no frost or snow, and produces early crops, in the spring. They have all superior farm buildings.

Mr. Thomas Ramsbottom and Brothers, of Hawood

fields, near Bury, have long been regularly progressing in the improvement of a large high lying, poor land farm, their own property, by draining, fencing, planting, liming, marling, manuring, and road making. The highest part of the farm is eight hundred feet or more above the level of the sea. The whole farm is a light peaty soil, not very deep, and resting mostly on the green stone rock. When I was a boy, it was covered with heath; but it exhibits green meadows and pastures, with fine healthy dairy stocks upon them. The climate is unsuitable for arable cultivation.

Richard Kay, Esq., is actively engaged in making very perfect and substantial improvements on an estate lately purchased near Heywood, which had been previously exhausted by bad management. The whole is remodelled, and the cultivation cannot be excelled.

Joshua Knowles, Esq., Stormer Hill, Tottington, near Bury, is another of the class of spirited and determined improvers; having to combat against the unfavourable circumstances of a high altitude, an inferior climate, and an indifferent soil. As an example of what can be done in so unfavourable a situation, I shall here give the management of his farm, of which he is part owner and occupier, and part occupier only. The following is what I wrote upon going over the farm, in the autumn of 1843. I have frequently been on the farm since, the last time being in the autumn of 1848. It is still carried on in the same spirit, and with the same results; the only difference being, that he now occupies more land than he at that time did.

The farm contains one hundred and one statute acres, one half of which is tolerably level. The soil of this part is mostly a strong loam, resting upon clay. The surface soil is from ten to perhaps eighteen inches deep. The remaining part of the farm lies at a considerable angle, and is much undulated. The surface soil upon *this part* of the farm is thin, and the subsoil, a stiff clay. The lowest part of the farm will be three hundred and fifty feet above the level of the sea, and the highest part, nearly double that height. The average

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fall of rain will be forty inches at the least. Of course, the *climate* either as to *cold* or *moisture*, is not a good one, and little adapted for the cultivation of corn. In the neighbourhood, there is a good demand for milk and butter; and the whole of the produce is converted into these articles, except that which is required for the keep of horses.

The whole of the farm has been drained by the present occupier. Most of the old crooked fences are levelled, new ones planted where required, and good occupation roads made. The buildings have also been made substantial and convenient, and are mostly new. Two tanks have been made for urine and dung water, each ten feet by ten feet, and four feet deep, and are so situated that the liquid can be drawn off at the bottom into a water cart, and taken to the land. This is spread upon the meadow land, which consists of fifty acres, kept in a highly productive state by irrigation with water from a brook, or with liquid and solid manure. One meadow has had eight good crops of grass cut from it during the last three years. Last year, there were twenty-six acres of Italian rye grass and clover cut for soiling horses, and for hay. Part of this had been sown in the spring of that year, another part in the spring of 1842, and the remainder in 1841; but two years appears to me to be long enough to allow it to remain growing; for, in the third, it is generally thin of plants. For the first and second years, it was cut three times each year. In 1842, these were thirteen feet in length, at three cuttings, from a field sown that spring, in the month of March. In the following year, a field of seven and a half acres kept seventy head of cattle for fifteen days, beginning on the 9th of June. On July 28th, the second cutting was commenced, there being an exceeding full crop. In the same year, there were eight acres and two roods of swedish turnips, and four acres and one rood of oats; no wheat or barley, a few potatoes, and ten acres of permanent pasture. There are also woodland, gardens, and pleasure ground, to the extent of three acres or more.

The rotation is as follows;—1st turnips or potatoes, after Italian ryegrass and clover, or oats; 2nd Italian ryegrass and

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clover, cut for soiling or hay; 3rd year the same; and the 4th also the same, except a part in oats.

The stock kept during that year consisted of forty milk cows, one bull, thirteen heifers, stirks, and calves, and sixteen horses. There is a Print and Bleach works connected with the farm, in which a considerable number of horses are employed.

Within these few years, there have been nineteen acres marled, and also a considerable portion of lime used within the previous eight or ten years. The ploughing is always deep, whether the surface soil be shallow or not; but only one furrow deep, not subsoiled or trenched. The turnips and potatoes are cultivated in ridges, these being from thirty to thirty-six inches from centre to centre, with the intervals deeply horse hoed, several times previously to the tops closing. The turnips in the rows, are thinned to from twelve to fifteen inches distance. A heavy dressing of manure is given to the crop, which is a mixture of stable dung, night soil, and ashes. The quantity is about thirty-five tons on an average to an acre. In 1842 the turnip crop was upon the highest and worst part of the farm, and the crop averaged thirty-three tons per acre, being a very even, clean crop. It took the prize from the Manchester Agricultural Society. On the second day of August in the following year, I was upon the farm, when the turnip crop had the appearance of being the heaviest crop I had ever seen; but I was informed that the mildew took them in a few weeks after, which prevented them getting any where near the weight they otherwise would have been; but, notwithstanding this, the crop would yield near thirty tons per acre, as I have been told. A few years previously to the date of these occurrences, the field which was sowed with turnips in 1842, was not worth the rent of ten shillings per acre. In the year 1843, Mr. Knowles had a premium awarded him by the Manchester Agricultural Society, for the best cultivated farm, as owner. Although he was merely the owner of a part, he could not compete as an occupier only.

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As a sample of superior farming on a small scale, I shall give that of Mr. James Mason, of Poppythorn, in Prestwich, five miles from Manchester. His farm consists of forty-two acres of sandy loam. He has three acres of permanent pasture, and three of old meadow. The meadow is covered with good dung, every second year, and the pasture is kept in high condition. The rest is under the following course of cropping:—1st oats after grass, 2nd potatoes and turnips, 3rd wheat, 4th clover and other seeds, 5th pasture, and 6th pasture. His crops are always of a superior character, the whole farm is perfectly clean. The crops consist of hay, straw, turnips, and small potatoes, being mostly consumed on the farm by a milk stock, and two working horses. He keeps eight milk cows; but could, and would keep more, but has not standing for them. About thirty tons of manure per acre are applied to the potato crop. He formerly took his oats after wheat, and then clover. In this case, he took potatoes after grass or clover. He thinks of returning to this system again; so that his rotation will stand thus: 1st potatoes after grass, 2nd wheat, 3rd oats, 4th clover and seeds, 5th pasture, and 6th pasture.

I consider these simple and profitable rotations; and the land, with good management, will keep fresh and healthy.

Another example of superior farming is Mr. Robert Bentley, of Sand Field, Pilkington, 6 miles from Manchester. His system of cropping is as stated in the last rotation; clearly proving that good farming does not depend upon how the crops are placed in the rotation; but on *properly draining*, *working*, *cleaning*, and *manuring* the land. This farmer has 25 acres of excellent meadow land, made out of a bog not previously worth one shilling per acre rent. In valuing the township in 1848, I put forty-two shillings upon it. The arable part of the farm is a sandy loam, similar to the last.

It is but fair to state that Mr. Joseph Bentley, the father of the present tenant, was the first improver of this farm, but his son, in his general management, follows in the steps of his father. This farm has been completely remodelled,

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Mr. Ralph Unsworth's, in the Township of Winwick, is one of the best cultivated farms, on the light description of soils. His management is rather peculiar, but it seems to answer well, both for the land and himself. He is the heaviest manurer of any man I am acquainted with, excepting what I call market gardeners, near great towns. He gets eight heavy crops in six years; but in those six years, he applies seventy tons of manure, or compost, to the statute acre. His first crop is early potatoes after grass, the land dug, and the crop planted in ridges, with forty tons of manure given to it. After these potatoes, he gets a good crop of turnips the same year. The second year, he takes a crop of winter potatoes without dung, or but a slight dressing. The third year, wheat. Fourth year, oats, sown with clover and grass seeds, and fifteen tons of compost set upon the stubble after the oats are carted, or in the winter, in a frost. Fifth year, cut twice for hay, and then fifteen tons of compost given in the autumn or winter. Sixth year, again cut for hay, and then lies pasture a few years. His crops, and his pastures are always good.

Dr. Sillar's management, on his farm in Rainford, is worthy of notice. One part of his farm lies at a considerable angle. This part is a very indifferent soil, and before he commenced improving, it was of very little value. He has drained it, remodelled the fields, and by a proper cultivation and manuring, brought it into a very productive state. The drainage from this portion of the farm is collected into a reservoir, from which he creates sufficient power to thrash his corn, cut his hay, straw, and root; and the water afterwards irrigates a meadow below, and thus converts what was once a great enemy, into a very great friend. His farm altogether is very neat and under the improved mode of management. He keeps it clean and gets good crops. A considerable portion of the hay, straw, and roots is sent to market, and manure purchased in return.

With respect to the tenant farmers of the district comprising the south western portion of West Derby hundred; which

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as I have said before, is the best agricultural district in the County, it would be too great a repetition to give a detail of the individual farms, I shall therefore confine myself to merely giving the names of a few of the most enterprizing in the locality, whose examples are equally worthy of imitation as those parties, the detail of whose management I have given.

THOMAS BIRCH, *Kirkby.*
JOHN BIRCH, *Orrell.*
JAMES BIRCH, *Sefton.*
ROBERT BIRCH, *Netherton.*
EDWARD RODGERSON, *Fazackerley.*
HUMPHREY HOLME, *Melling.*
HENRY CLAYTON, *Aintree.*
WILLIAM LONGTON, *Rainhill.*
JAMES ROSE, *Halebank.*
GILBERT HALLSALL, *Halebank.*
HUGH SPEED, *Huyton.*
WILLIAM BOYES, *Speke.*
THOMAS LANGSHAW, *Speke.*
JAMES LANGSHAW, *Speke.*
THOMAS ATHERTON, *Speke.*
WILLIAM ATHERTON, Senr., *Speke.*
WILLIAM ATHERTON, Jun., *Speke.*
THOMAS EDWARDS, *Speke.*
EDWARD HOLME. *Childwall.*

The general *improvements* on these Gentlemen's farms, consist of draining the fields and ditches, opening water courses, eradicating old, and planting new fences, filling up pits, making occupation roads, &c. Their general management and cultivation, after these improvements have been effected, is carried out in such a manner, as to place it in character with such foregoing improvements. The manuring has been liberal and judicious, the entire farms kept clean, and exhibiting that rural economy which confers such great credit on the individual; and which it would be well if more would imitate. The management of all enriching substances, and on which so much depends, is never neglected. The

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amount of capital successfully expended upon some of the farms is so very considerable, that in some parts of both England and Scotland, noted for good farming, it would scarcely be credited.

The general cultivation and rotations adopted upon the generality of these farms, have been described in the detail of the management of the sandy loams in that district; and further details of individual farms, will be found in the Appendix.

Robert Neilson, Esq., of Halewood, has made important permanent improvements on his farm, in the way of draining, eradicating old fences, planting new ones, &c. Likewise, his neighbour, Mr. Walker. These gentlemen are two of the principal tenants of the Earl of Derby in that locality.

The improvements effected by the tenants of Mr. Clifton, at Lytham, have been noticed elsewhere.

In many cases, where the landlords have been at the whole expense of *draining* and other *permanent improvements*, I am sorry to say that the tenants, in their practise, have not followed in the same spirit of improvements. This is decidedly wrong; because, in such cases, there has been a great outlay without an adequate return. It is folly to make permanent improvements, if their cultivation is still to remain bad or deficient.

FARM LABOURERS, COTTAGES, ALLOTMENTS, &c.

With respect to the moral principles of the *farm labourers*, in Lancashire, I am afraid they do not stand so high as they did forty years ago. And I am also of opinion that the farmers themselves, do not render that strict justice to their labourers as they did forty years ago; nor is there that fellowship or friendly feeling which there was then. That kindly feeling which ought to exist between them, is still on the decline; and the evils of which I speak, are, I am afraid, much on the increase, arising, in a great measure, from the fault of the masters and mistresses increasing the distance between

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themselves and their servants. The great body of farmers seem to care little about their servants, except to extract the greatest possible amount of labour from them; and yet, in my opinion, they take the worst means of ever obtaining this. They have been considered too much in the light of machines, from which the most that can be, ought to be extracted. In short, I can see some farmers who look more to the comfort and well-doing of their horses, than their labourers. Where this principle exists in the master, the servants will resort, in self defence, to cheating. Some of the greatest money-making farmers I am acquainted with, have been good masters, and in every case, their regular farm labourers have been good servants, seldom ever changing one. I also must say, that I have known one or two money-making men of a contrary stamp. But in these cases, the master was always with the men when at work, from week end to week end, never even going to market, but when necessitated to do so, often sending a head servant on this business.

A master, to have good servants, should render them strict justice; he should never expect more than *a fair day's work* from them, for *a fair day's wages*. But farm labour is not like that of handicraft, or those who work under cover, that can perform their work in certain stated hours. Farmers' servants have sometimes to make extraordinary exertions at some periods of the year, or loss will be the consequence. To balance this, indulgences should be granted in bad weather; but, to call this indulgence, is wrong, it is only *strict justice*.

If a master be content with a fair day's labour, which he should insist upon, he will generally get it. If he expect more, he generally fails to get that, without a very great deal of looking after. Proper food, and other comforts, with now and then little innocent indulgences, should never be lost sight of. The truth is, that the master should consider himself as much beholden to his servants for a living, as they are to him. Their moral conduct, both in language and other respects, should be looked to, and the master will lose

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nothing by it, either in his time, his pocket, or respect. One thing should never be allowed, that is, young men and women should never be allowed to work together, without the regular superintendence of the master, or of a very trustworthy married labourer, past middle age. Neither should a female servant ever be put to do anything about a farm, which the master would think improper for his daughters to do, if he wished them to be prudent and virtuous. I often see farmers who are really well meaning men, very thoughtless on these points.

Forty years ago, when a young couple married, both man and woman had something to begin the world with. At this time, they are frequently found to be in debt for their wedding clothes. At that time, a married labourer had nearly always bacon hanging in the house, a couple of loads of meal, and potatoes sufficient for the winter, stored. Now, there is seldom anything stored for that season, excepting the potatoes. Saturday night marketing journies, or other similar causes, which are now but too frequent; together with deficiency of work, or wages, must account for this. When I was a farmer, those servants who boarded in the house, partook at the same table as myself, and sat in the same room of an evening, talking over what we had done, how we might have done it better, and how we could best do the work tomorrow, or next week. It was the same in my father's time, and neighbouring farmers, with their regular farm servants. I can never recollect having any *regular farm labourers*, who could not both read and write, such having always something innocent to occupy their minds when not at work; and these men, in my opinion, will always make the best servants.

The labouring classes in the manufacturing districts, and those connected with the various manufacturing establishments; are much improved both in morals and intelligence, within the last forty years. This has no doubt been brought about by the establishment of sunday schools, national schools, and others now connected with the factory system.

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The style of living of the labouring classes in this county, varies in its respective localities. The potato forms a prominent part of the diet in every district, together with milk, cooked in various ways. Thick oat meal porridge, milk, and potatoes, form a prevailing diet in the northern and eastern parts of the county, for the *poorest families*, and for *children*. For the latter, this diet may be good enough; but, I think workers ought to have a little fleshmeat, of some description, once a day. "The labourer is worthy of his hire," and is, therefore, entitled to a little of the good things of which he is one of the means of raising, that is, if he and his family are *industrious* and *frugal*. I should never wish to see the *intemperate*, the *extravagant*, and the *lazy*, well fed. This diet is varied almost in every working man's family, by part of the meal being made into *bread*, instead of *porridge;* some allowing a little butter, or cheese, after breakfast and supper, particularly to the *working part* of the family; in fact, the *workers* have generally a little fleshmeat, except, as I said before, in the poorest families. Oat meal, potatoes, milk, &c., together with *bacon at dinner*, and sometimes *beef or mutton*, with a variety in the form of cooking the same materials, form the principal food of all the *industrious*, *orderly*, and *frugal* part of the labouring classes in most parts of the county; and in the southern and western parts, wheaten flour is generally made use of, instead of oat meal. The form of cooking, &c., may be varied without any additional expense required for the support of a family; for instance, wheaten flour may be substituted for potatoes in the form of *bread* or *pudding;* part of the oatmeal may be made into bread instead of porridge; and part of the milk may become butter or cheese. By this variety in the form of cooking the materials, with bacon or other meat in addition to dinner, a pleasant, healthful, and invigorating diet is obtained, sufficient to support any working man in health and spirits; and every working man ought to be able to live, on an average, as near as possible up to this style. When this is not the case, I then consider wages below what they ought to be.

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Families that work in manufactories, live in a different style from those employed in agriculture. When trade is good, delicacies of every description their means will allow, are indulged in, but when trade is bad, they have frequently to return to the porridge and milk, and potatoes without meat.

Milk and porridge are not used to the same extent at present, as formerly; but I am convinced they not only form the cheapest, but the most healthy, food for a breakfast and supper, particularly for a rising family.

Sir John Sinclair said "that now, when the cultivation of potatoes was introduced, we might bid farewell to famines." Sir John was wrong, and Ireland proves him to be so. It is not the introduction of the potato here, which has put a stop to famines in England. It is the amount of *capital*, and the security which property finds in this country. The former enables men to store produce in plentiful seasons; and by the latter, they know it will be safe when stored. I am most decidedly of opinion, that where the inhabitants of any country are brought to live *solely* on *potatoes*, that country will be often subject to these calamities. They are *not a certain crop*. They frequently fail to a greater extent, from different causes, than grain of any description; sometimes to only one-fourth of an average, and frequently to one half. No capital can store them beyond twelve months; therefore, the results must be dreadful by such failures, when there is no other resourse to fall back upon. Potatoes should be given pretty extensively to pigs, cattle, &c.; and man may live safely, and ought by all means to live partially, upon them; so that when a general or partial failure of corn crops takes place, he can fall back on the cattle food. This we may call the English manner of living, and is perhaps one cause why we have no *real famines* now.

The farm labourers, in South Lancashire, are, I believe, as well accommodated in their dwellings, as in most parts of England, or at least, so far as I am acquainted with other counties; but, even here, the accommodation is generally far

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short of what it ought to be, either for comfort or decency. There is often plenty of room, on the ground floor, but ill contrived, inconvenient, and too low overhead. In erecting them, comfort, which would have cost little more, has never been studied at all. The windows are small, often without casements, and the doors as misplaced as possible for affording warmth, or for providing sufficient and proper ventilation. The sleeping rooms are still more objectionable, the roof often coming down to the flooring, more like hen cotes, or pigeon boxes, than sleeping apartments for human beings; and of that class by which our very existence is at stake. Frequently, there is only one sleeping apartment, and scarcely ever more than two. In most cases, when these cottages were erected, by the extra expenditure of £20, every necessary requirement might have been furnished. In the purely agricultural parts of the county, the roof is generally thatch; which is certainly more comfortable than slate, unless the latter be ceiled underneath, which ought to be the case, whether thatch or slate be used. An unceiled thatch roof has an unsightly appearance, and is also the cause of continual expense to the owner, and is a great robber of the farmers' dung hill, besides affording lodgment to rats, mice, and other vermin.

There are exceptions to the above rule in South Lancashire, there being localities, and individual cottages, in the farming districts, in which comfort, neatness, and convenience, are combined, and at a moderate expense, which may be the case, when no embellishment is required. When a gentleman has the means, and is an admirer of a real picture, money cannot be more innocently spent, than in embellishing his rural cots; and nothing will afford him more satisfaction when he lays his head upon his pillow at night, than such an outlay, if other necessary points have been combined in their erection.

The greatest number of cottages ought to have two rooms on the ground floor, and three above. It is no use preaching up morality to the labouring classes, while father, mother,

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sons and daughters, are allowed to sleep in the same apartment; and I think it is still worse to allow sons and daughters to sleep in the same room without the parents. A cottage, therefore, with only two sleeping rooms, is quite as objectionable as that with only one; that is, where there are both sons and daughters grown up.

In North Lancashire, the labourers' cottages are worse than those in the South. They have, in most cases, particularly in the Fylde district, clay walls and floors; and very often the sleeping rooms are on the ground floor, more like an Irish cabin, than what an English cottage should be, or what it is often represented to be. Every district will do with some cottages of smaller size to accommodate old couples, and labourers without children, or perhaps only one child, or more, if of the same sex. Too large a cottage, or even any other dwelling, is an incumbrance. No cottage, or even any room in any house, should ever have a door on that side the room at which the fire place is situated, or on any other side near it. The two corners on each side the fire, should always be free of doorways. Every sleeping room should have a fire place in it, or some means of ventilation, besides the window, when the door is shut; and every window should have a casemnet or sliding light. Most cottages, if not all, which are strictly in the country, should have gardens attached to them, of such an extent as would be found convenient. The quality of the soil should be such as would be worthy of cultivation. Very frequently, these edifices are erected upon some waste or barren piece of land, in which case, there is no inducement for cultivation, consequently, complete negligence is a frequent occurrence. Where there is any prospect of a reasonable return for industry, there are very few of our English peasantry who do not pride themselves in having a well cultivated garden adjoining their cottage homes; but when it is seen that all their industry is of no avail, and all their hopes are blighted, in exertions spent upon some barren patch, it is no wonder that carelessness is the consequence.

With respect to cottage allotments, it will depend upon

circumstances, whether they are of service or not. If the man has a family, and the allotment is at no great distance, it will be of real service to him; but not as a means of providing over hour labour, and this to be the only means of keeping him out of the workhouse, or from the necessity of parish relief. In my opinion, too much is expected from this. To tailors, shoe makers, weavers, spinners, &c., working in a garden, morning and evening, may be real recreation; but this is not the case with farm labourers. Farm labour is rather severe; and to work in a garden, morning and evening, produces no change. I worked until I was thirty-five years of age at farm labour, and I know, that if a man does his duty in the day, he will have little inclination to work over hours, except at very light work indeed. It is not in the physical powers of man to work fourteen or fifteen hours a day, and work *fairly* at *hard labour*, unless he be young and stout. I scarcely ever knew a farm labourer's garden kept in the best style, if the work were all done at over hours. As a master, I should not like to employ a servant who made a practice of it to *any extent*. I am aware that some farmers tie their servants to work more than their regular hours on their farms, but I never saw one that gained much by it. I have done this at *particular seasons*, but always allowed for it at other times. *Industry*, *temperance*, and *frugality*, are beautiful to look upon wherever they are found. They always bring *health*, and ought to bring *comfort*, to all who practise them. In general, they do bring comfort, when a man has regular employment, without working over hours. To a certain extent, labour is *sweet*, but push it beyond this, and it becomes *bitter*; and if a man can save himself from the *work house*, or pauperism, only by *over hour working*, it will eventually become *irksome*. This will soon create *disgust*; and once let it proceed so far, and comfort, morality, and happiness, are sure to sink in the ruins. Man will support a little over exertion, if the result produce some superfluity for himself or family; or is a means of depositing small weekly or monthly sums in the Savings' Bank. But if this is *not* the

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result of his exertions, no wonder that his heart sinks within him, or that he becomes reckless.

If a labourer has a rising family, or has not full employment on a farm, an allotment would be of the most essential service. It will be a school at which his children may learn the art of cultivating the land, and fitting them for farm servants; besides the immediate profit they will bring him in from the product of their labour. If he has not full employment *from home*, an allotment will be very beneficial to him, in providing him with profitable employment *at home;* and perhaps preventing him from spending his time and his money where he should not do, and thus be the means of retaining steady habits, which is of great importance. It will also give him a feeling of attachment to the place, and to his superiors; and, of course, induce him to pay a due regard for his character. A man may also work a *few over hours* in a *week* without much harm to himself; and, no doubt, the generality of such tenants will do so, particularly at light work. A man also derives a profit from these allotments; that is, he receives more than regular wages. If the allotment be near home, frequently the wife may do a few hours work in it, when not engaged in her household duties. In all cases, it should be near home; if it exceed one quarter of a mile, the distance is too great, to be of much real service, and for over hour labour it will be of no service whatever.

In Lancashire, the allotment system has not been much tried; but, there are a few places where there are allotments, and in two cases within this parish; but the result, in both cases, is in confirmation of the above views. The allotments in both instances, are too far distant, being nearly one mile.

The best of labourers are not often good managers; and if a labourer has not the requisite skill for managing an allotment or small farm, he would do better to rely for support upon his earnings as a servant. A skilful labourer may take possession of a small plot of land, and turn it to a profit; and as his circumstances rose by industry and good management, he might take possession of a small farm, and ultimately

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one of larger extent, according to his increased skill and capital.

The following is an outline of the way in which an allotment may be cultivated to the best advantage.

Rotation for a cottage allotment of half a statute acre, on a brown loamy soil:

12 rods—Early potatoes, with two and a quarter tons of dung. Swedish turnips the same year planted.

12 rods—Mangel wurzel the second year.

12 rods—Beans, pease, vetches third year. Turnips, rape, kale and broccoli, may follow the same year.

12 rods—Late potatoes fourth year, with two and a quarter tons of dung.

12 rods—Cabbages fifth year, planted fifteen inches asunder every way. Every *alternate row* with early varieties. The other row, every alternate plant early and late cabbage.

12 rods—Wheat sixth year.

8 rods—For seed beds and other plants.

80 poles.

THE SAME ROTATION MORE SIMPLE:

1st, one third of the land potatoes. One half early ones, and one half late, with four and a half tons of dung. 2nd, mangel wurzel and cabbage, one half of each. 3rd, half beans, pease, vetches, rape, broccoli, &c., and half wheat. Swedish turnips would be second crops after early potatoes. Rape, &c., would come after beans, pease, and vetches.

Upon peaty and moss soils, I would exclude the wheat and vetches, and more potatoes might be introduced, as those soils are more suitable for potatoes, than for wheat.

In the autumn of every year, the wheat and vetches should be sown, twelve rods of the former, and four of the latter. The remainder of the land to be *dug over deep*, in the autumn and winter, as the crops are removed, in order to prepare the land for next year's crops, and to receive the benefit of the frost, &c., in the winter.

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The twelve rods for early potatoes I should recommend to be trenched in the autumn, fifteen inches deep. By following this rule, the whole allotment will be trenched every six years.

In the first open weather in February, sow the beans and pease, in rows, covering the seed six inches deep with soil, leaving it in a ridge. When the seed has sprouted about half way through, or less, rake three inches of the soil off the ridges; the crop will soon be above ground, and quite clear from weeds. When the crop is about four or six inches above ground, hoe a little soil to each side of the rows, and then delve the soil up in the intervals between each row of beans and pease. Then plant a row of late or savoy cabbages in each interval. These will come forward as a crop after the beans and pease are removed. Late potatoes, or turnips, might be planted at intervals, but they would require dung.

Keep all these crops clear of weeds by hoeing and weeding; and when the beans and pease are all gathered, remove the stalks or hulls to the dung heap, and dig the ground over. This will give air, and accelerate the growth of the cabbage, &c.

In the first dry weather in March, plant the early potatoes, giving two and a quarter tons of dung to the twelve rods. Keep them clean, and as the crop is gathered ready for the market, or use, plant swedish turnips, or sow yellow ones. Swedes are far superior for pigs. In this month, make a seed bed; sow swedish turnips, rape, kale, and broccoli, for transplanting. When these are above ground, weed the plants out to three inches asunder; they will then become strong, if kept clean by hoeing with a two inch hoe, and by weeding.

In the first dry weather in April, plant the late potatoes for winter use, in rows, giving the twelve rods two and a quarter tons of dung. Keep this crop clean by digging, hoeing, and weeding.

Towards the latter end of this month, or the beginning of May, sow the mangel wurzel, in rows, twenty-seven inches asunder. Thin the plants out to ten or twelve inches asunder in the row, when they are in the fourth leaf, and dig the intervals once a month, during the summer.

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In June, the winter vetches will be cut, and as the crop is removed, dig the land, and plant kale, rape, broccoli, late potatoes, or swedish turnips; or sow common ones, for second crops. Keep them clean by hoeing and weeding.

In the autumn, when the late potatoes are got up and stored, dig the ground, and plant cabbages in the following manner. First, plant late ones, in rows, thirty inches asunder, and the plants thirty inches asunder in the rows. Then plant an *early York* between each of these, in the *same row*. Then plant a row of early Yorks, nailors, or sugar loaves, between every row of the above, at fifteen inches asunder in the row. This will leave the plants *fifteen inches asunder every way* upon the ground, and one fourth of the plants will be late ones. In the first dry weather in spring, hoe well between the plants; and fill up with fresh plants, all those places where the plants are dead.

As the early varieties become ready for cutting, remove them; dig the ground, and hoe the soil up to the plants of the late cabbages, which will then soon cover the ground. If any of the late ones should fail through disease, or any other circumstance, remove them, and plant a swedish turnip, or kale, &c., in the place thereof.

The late cabbages may be taken up in November, and stored for use, when the wheat crop may be sown upon the land after it has been dug.

To store cabbages, place them in a dry room, or shed, or airy place, out of doors; lay them in layers the wrong side down. If out of doors, bring the heap to a ridge, and cover them with a little straw.

In order to collect, and raise dung, let a few yards square of land be selected in some convenient corner of the garden for the dung heap. Let the ground be made a little hollow, and the bottom well beaten, first covered with clay, if it could be procured. To this place lead all the refuse of the garden, such as potato tops and pea stalks, the faded leaves of cabbages, mangel wurzel, &c. &c.; the stumps of cabbages, kale, broccoli, &c.; dressings of cops, scourings of ditches,

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ragweed, docks, thistles, fern, &c., from waste land and road sides; bearing in mind that these are all cut before their seed be ripe, the best time being when they are in flower: sedge, or coarse grass and rushes, from the margins of pits, ponds, ditches, and brooks. To all these, mix any dung which may be purchased, or collected from the roads, or from the occupier's pig-cote; the *ashes* from the cottage, and the *sweepings* of the cottage and yard, the night soil, the *urine* from the cottage and pig-cote, *soap suds* and *washings* of the cottage. Let all these be laid together in regular layers as collected. A few cart loads of bogsoil, or tanner's spent bark, might be added every year. The latter can be bought for sixpence per a two horse load. For the proper management of pigs, litter should be given them; and that not sparingly. This will add considerably both to the dung heap, and to the comfort of the animal; both of which should be constantly kept in view, or neither will the *animal*, the *dung heap*, nor the *cottager*, thrive.

The following plan is the best for securing all liquid manure from the house, the petty house, and pig cote. The two latter should be built together, with a recess behind, which ought to be *covered over* to keep out *rain water*. This recess should receive all the night soil, urine, suds, &c., from the cottage, pig cote, &c. Always after this recess has been cleaned out, immediately cover the bottom six inches deep, with any kind of soil, ashes, or tanner's waste. Always have a quantity of these lying near, so that, every two or three days, a few shovels full can be thrown into the recess, which will take up, and retain, all the liquid matter as it accumulates, till such time as the whole mixture is carried to the dung heap in the garden.

By these means, coupled with care and attention, a considerable quantity of good manure may be collected in a year, the labour of which will not be heavy.

To carry out the principles of this system of cultivation, will require about sixty-four days' labour annually, taking brown loamy soils into consideration. On black soils, the

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labour will not be so much; they being easier to work. No allowance has been made for wet and broken days, but full days of fair labour, all the digging being considered a full spit, that is, from eight to twelve inches deep. Besides the labour, an annual expenditure of about £7 will be required in rent, rates, dung, seeds, &c., and the value of the produce will be about £21, no allowance being made for failures of crops. No cow can be kept on a half acre allotment; and I am persuaded that Mr. Cobbett never did keep, or ever saw a cow kept, a whole year from the produce of a quarter of an acre, (although, on this point, he has displayed great ingenuity in his "Cottage Economy,") unless that cow were a Shetlander. In making a comparison, it is immaterial what size of cows, or acres are meant; but, in affirming that so many cows can be kept on an acre of land, it is of consequence that the size of both the one and the other should be stated. The best remedy for the improvement of the condition of the Rural Labourer, is the improved cultivation of farms.

In Lancashire, and, in fact, every other county I am acquainted with, it would pay the farmer well to employ double the number of men they are now doing. In some instances, on the best cultivated farms in this county, as much as £4 per statute acre is paid for the article of labour alone. How small a proportion does the generality of the country bear to this? Yet, nothing more is done in these cases, but what is advantageous and necessary for the proper cultivation of the farm; that is, nothing is done by manual labour, where it would be more advantageously done by other means. Where the fields are small, and the fences crooked, there are a great number of small plots of land, on which the *spade* would be more profitably employed than the *plough, harrow, &c.*; but the best plan to adopt would be, to make the fields larger, and the fences straight. There are other benefits in the use of the spade, in cultivating land, which might be more extensively carried out, than at present is done. When a piece of old tough grass land is intended to be planted

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with potatoes, or sown with turnips, mangel wurzel, &c., I am quite satisfied, that the best and the cheapest way to prepare it would be, by trenching it with the spade, as by this means, the tough grassy surface is got rid of at once, and at less expense than by the regular process of fallowing. The spade, or the three pronged fork, would answer well in preparing any stiff, or clay land, for green crops; and it would, I feel certain, answer the purpose of a summer fallow if the land were trenched. In all these cases, four or five ploughings, and the same number of harrowings, would be saved by one deep digging or trenching. This work would have all to be done in the winter months, at a time when labour is very scarce. The great desideratum is, to find employment in the winter. Where only one ploughing is required, the spade or fork cannot contend with the plough; the advantages, therefore, to be found, will only be in cases where a number of ploughings are required for pulverizing and cleansing the land; and, in this case, trenching must be adopted, the filthy soil being put below, and the clean brought up.

GENERAL REMARKS, AND PRACTICAL OBSERVATIONS.

On a general view of the county of Lancaster, it will be found, that most of the land bordering on the great public roads, has been improved since the date of the last report; but, in the interior, or at any distance from good roads, the cultivation is little improved; and in some localities, it is even in a worse state, particularly if the land be a heavy clay soil. It is by the railways going through what I call the back settlements of the county, that the Lancashire farmers have acquired such a bad name; and yet, by travelling on other lines, in other counties, I find matters little better. A stranger travelling from Manchester to Liverpool, or on the north road from Liverpool to Lancaster, by the old public roads; and then by the railways from Liverpool to Manchester, or from Liverpool to Preston and Lancaster, would

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almost suppose he was in another county altogether. It is the same with land lying near other old public roads, when compared with that lying at a distance from them.

Under these circumstances, notwithstanding what has been done, and is being done at the present time, in the way of improvement, an immense field for action yet lies open for the employment of capital, in the improvement of the soil; and I have not the least hesitation in saying, that millions might be spent upon the land in this county, and return a liberal per centage; and without such risk as is experienced with railway, mining, and other companies. Look at the immense sums *lost* by these; or on which only a small per centage is received, while the land lies in *some localities*, quite neglected, which would afford a sure and adequate return.

There is yet a considerable extent of moss land in various parts of the county, of no value in its present state, which would be rendered very valuable, if improved. On Pilling moss there is a large extent, which is yet in an unimproved state. Not one half of Chat moss is commenced as yet, and a great part of what is in hand, is but indifferently cultivated; although every one can see what is, and has been done by Mr. Baines, and also by Messrs. Evans and Co.; and they, in my opinion, do not adopt the best course in cropping, for making the most clear profit. On White moss, one half perhaps not cultivated, lies side by side with the cultivated. At one step, I can step off land not worth one shilling per acre, on to land worth thirty shillings of rent; both of which a few years ago, were equal in value. It is the same on Chat moss. Very great mistakes have been made in improving moss land, owing to a too great haste in cropping. It requires patience and perseverance; it being of no use cropping until it is in a proper state.

In the townships of Cuerdley, Widnes, and Ditton, on the river Mersey, above Runcorn, there is some marsh land, which might be made of considerably more value, by securing it from the overflowing of spring tides. In the former township, nothing has been done in this respect, since 1814; but

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in the two latter there has; yet more might still be done.

On the estuaries of the Ribble, the Wyre, and the Lune; as also on the shores of Lancaster and Morecambe bays, there are extensive tracts of land under the influence of high tides, upon which little has been done since the above date. This land, is at present, of little value in the aggregate; which, with proper embankments, and with properly secured outlets for land water, so as to prevent the flowing in of the tide; also with suitably arranged open drains, or ditches, in dividing the fields, might be made of great value.

I have little doubt, that before another century has passed over, the greatest part of Morecambe bay will be secured from the tide and land floods, and brought into cultivation; which would be a far more lucrative speculation, than most of the railway and other schemes. Because, this will produce something from the land, of real value, which is not the case with many speculative schemes. The Dutch would soon secure it from the sea.

By opening out, widening, and straightening, and by raising the banks of the river Douglas, and of other water courses, very much benefit would result to the adjacent land, which is subject to be overflowed; and it would also afford more fall for the drainage of other lands, which lie at a greater distance from the rivers and brooks.

Most of the enclosures of commons, moors, and wastes, are miserable abortions. If the improvements were thoroughly completed in such a way as they ought to be, there would be a profitable return for the outlay; but, in consequence of it only being half done, the returns must be scanty.

In the hilly districts of the eastern parts of this county, thousands of acres might be made of double their present value, at a small expense, by catch-work irrigation.

There are few farms and districts, on which considerable improvements could not yet be made, either in the drainage, the mode of management, as regards the aration, cleaning, manuring, &c.; also in the fences, homesteads, occupation roads, &c. A general reformation in the farm buildings, and

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farm yards, will proceed but slowly; yet it must be done, if farmers must be enabled to carry on their business in a systematic manner, and on improved principles. On various estates, which have been brought under notice, improvements in every department are in progress, and, perhaps, in most of these cases, as rapid as is prudent.

On an extensive portion of the sand lands, sandy loams, peaty, and mossy soils, a better cleaning and manuring of the land would almost double the produce; particularly if the rotations were extended a few years longer in every course, and the land allowed to lie in pasture those years. Three years up and four years down in grass, and three of these in pasture, would be a very great improvement on such soils, if always laid down in proper condition and clean, with a suitable selection and quantity of seeds sown. In pasturing the light soils, sheep would be a profitable stock. On the moss soils, heavy cattle would not do, but I see no reason why sheep should not answer; not for a standing breeding stock, but for feeding wethers, or for ewes in-lamb, purchased in the autumn or spring; the ewes being fattened, after the lambs are sold, on grass and turnips. When moss soils, or any of the light soils, are under constant aration, the crops, even if properly managed, become *light in the grain*, unless there be constant applications of marl. With rest and pasturage, less marl and manure would be required.

In a great portion of the eastern division, on account of various difficulties, and the moisture of the climate, grass farming is the most profitable; but, to make the most of it, considerable improvements must be made in draining, fencing, planting, and liming. There are few districts in any part of Lancashire, in which lime would not effect very important improvements upon the land. I feel confident that ten per cent would be realized by it.

In *some districts*, the land planted with potatoes, or sown with turnips, is, in general, badly prepared; too little dung being applied, and the after cultivation being neglected. In many cases, if the same quantity of dung was applied to half

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the breadth of land, and that land under good management, the farmer would gather the same weight of crops; and would save considerable labour, with half the seed, rent, and taxes. It would be nearly the same in all the following crops in the rotation. Then again, too many farmers sow *red clover and ryegrass*, instead of *white clover and a mixture of grass seeds*, when they lay their land down to pasture. I have always found it rather difficult to get *natural grass seeds* which would grow, and have also heard others make the same complaint. In the latter part of my practice, I always sowed the following mixture, and never had any failure on any description of land. 5 lbs. of white clover, 5 lbs. of ribgrass, 3 lbs. of trefoil, 3 lbs. of marl, clover, or cow grass per acre, with 1½ bushels of Pacay's perennial ryegrass. I should now recommend a greater quantity per acre. Farmers very frequently mow their clover three times in two years before it is pastured; and the consequence is, that there is little good pasture to be seen throughout a great extent of the county, except a few very old ones. Red clover should never be sown on land *intended to be pastured;* neither should land intended for pasture be mown more than once, unless *more manure* be applied.

The want of manure, and the neglect of weeding, are the cause of injury to too many farmers; yet, to neglect harvesting a crop, when ready, is not a greater folly than to neglect these. We frequently hear farmers complain of land, which had been in potatoes, turnips, or fallow, the preceding year, becoming full of coltsfoot, and talking of spontaneous growth. From conversation with farmers, I find many who scarcely think this plant *does seed;* although clouds of it are to be seen floating about during the months of April and May. Now, this being the time for fallowing for, and planting, potatoes and turnips, of course, the seed falling on such fields soon vegetates, and, if neglected, in a short time acquires strength, and the farmer then wonders how it has come. The only way to accomplish its destruction, where it has a strong hold on the land, is by deep ploughing in dry, or hot weather,

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when fallowing for potatoes, turnips, or wheat; as a few hours' exposure to a hot sun, will destroy the roots of this plant. Lime, bones, and marl, will frequently cause white clover, and other plants, to spring and flourish where they have not been seen before, or at least, not lately; but this is owing to these manures putting the soil in such a state as to be *congenial* to these plants; and, of course, their latent energies are aroused into action.

Ragweed *(senecio jacobæa)* is a biennial plant, and, of course, one cutting *when in flower* will destroy it, but its seed being winged, like coltsfoot, land is liable to be seeded any season from land at a distance; of course, to keep land quite clear from this weed, requires a little, and but a little, attention. Where there are sheep kept, there is never any trouble with it. Old pastures, in many parts of the county, are much over run with it.

The thistle *(carduus arvensis)* is decidedly a perennial, and a deep strong rooted one. In arable land, it may be destroyed by the same means as coltsfoot, but in grass land, it can only be kept down by attention If land be laid down to grass clean, thistles will never give much trouble; like coltsfoot and ragweed, the seeds are distributed by the wind; and being a lighter seed, or rather, finer winged than the others, the seeds will fly to a greater distance. The best way to keep them down in pasture land, and which will also weaken the plants much, is, to let them grow in the summer till they are just *going out of flower*, and then cut them down, and carry them off the land. Doing this every season, weakens them very much, and often kills them; while, by a more early cutting, several heads will rise again the same season, from one plant, like a thorn when cut. In pasture land they may be pulled up in rainy weather, when in flower, at which time the stem will be firm enough. The *carduus pratensis*, *carduus palustris*, and *carduus lanceolatus*, are easily destroyed, by pulling up when in bloom.

With respect to the management of manure, little attention is paid generally; but before this can be economically carried

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out, great alterations will be required to provide proper conveniences for doing so. In some instances, as much as one half the rent is lost through the mismanagement of this alone, partly through carelessness, and partly, in not having conveniences.

In general, there are restrictions against farmers disposing of hay, straw, or turnips. There can be no harm in selling this produce off a farm, provided an equivalent be returned in manure. This ought to be strictly enforced. However, I believe farmers generally are erroneous in their calculations, (or rather make none at all,) to prove when it is *profitable*, and when it is *not;* to sell produce, and buy manure in return. It should never be done but when there is a profit by the exchange. If hay, straw, and root crops are *below* a certain price, and dung *above*, it is then clear that loss must result from an exchange. By not paying due regard to this, farmers frequently *lower* the prices of the *former* in the market, and *raise* that of the *latter*, so as materially to injure themselves. From frequent calculations, on my native farm, I considered that if hay was *below sevenpence* per stone of fourteen pounds, straw *below threepence halfpenny* per stone, turnips twenty shillings per ton, and dung *above eight shillings* per ton, at a distance *above* five miles, I had no profit by the exchange. Of course, this was my rule. By dung, I mean horse, cow, and pig dung. A little will depend on what can be made on milking and feeding cattle, &c.

The practice of *starving cattle*, both as to food and cold air, in the winter time, when not giving milk, cannot be too sufficiently condemned. This, I am happy to say, is less practised than it was thirty years ago, but still it is practised with some. A cow, when she comes to calve, should be in good condition; she has then strength to get through calving, and her body is in order for producing milk and butter. It has been proved times innumerable, that the same cow gives *more butter*, from the *same quantity of milk*, when in good condition, than when in a low condition.

With respect to the small farmers in this county, I find

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their management like the generality of those, in the same class all over England. The management is worse than that of the great body of larger occupiers, for they are generally short of capital and skill, and are the very worst of calculators. They have nearly all one idea, that two cows will give more milk than one; whereas, the fact is, that *one* cow will give more milk than *two*, if that one be *well fed*, and the two only *half fed*. It requires a certain quantity of food to keep a cow *in statu quo*, producing neither flesh nor milk; of course, if she has only just this quantity given her, that food is a dead waste of property, as it produces nothing in return. If more than this quantity be given, then she begins to make a return, and the more that is given judiciously to a certain *extent*, the greater will be the return in proportion to the quantity of food given.

Most of the small farmers might keep the same quantity of cows they now do, and keep them well, so as to produce double the value of milk and butter now produced, if their land was in proper trim, and under a better mode of cultivation. They would, at the same time, raise more than double the quantity of vegetables for their families.

In the Farmer's Herald of January, 1844, I wrote the following account of the management adopted upon a small farm in this county, upon the principal of green crops and grasses, without any grain. It is occupied as a small Agricultural School, and is situated in the township of Orrell, near Wigan; and in the occupation of the Rev. John Holgate. Since this was written, it has changed ownership once or twice, during which transitions it has been, for a few years, rather neglected, owing to insecurity. It is now, however, under sufficient security of tenure, and the same principles of cultivation are adopted. I insert it not only as an example of superior management, but also as showing in what manner the rising generation of small farmers and agricultural labourers may be instructed in the rudiments of a plain education, combined with a knowledge of their calling in life.

The farm contains seven statute acres, including the sites

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of buildings, yards, &c. The land is light, and was, a few years ago, very poor, and is not of the best description of light soils.

In these seven acres there were twelve months since, a cesspit and a road quite across the farm; these are now quite done away with, and their sites, by very considerable labour, made into cultivatable land, so that the whole farm will be under full cultivation *next year*. The following is the amount of produce *this year*:—

Five short-horned milch cows have been kept through the summer. On the 14th of this month there were, on the premises, 6 tons of hay, 7 tons of Mangel wurzel, and 18 tons of Swedish turnips. This produce will keep the same cows well till June 1st next year, as it will afford *each cow* the following weight of food *each day*—15 lbs of hay, 18 lbs of beet, and 47 lbs of turnips. Total, 80 lbs each. There are also several cwt. of prime onions which will go to the market; and, in the course of the season, there has been £15. worth of early and late potatoes sold off the land, and the family of the master supplied with vegetables the whole year.

The cows are kept the year through in the stall or yard: in the summer, with Italian ryegrass and a little clover amongst it; and in the winter, on hay and roots. The following is the rotation adopted:—1st. root crops; 2nd. grass, sown after the root crops; 3rd. year grass. Of course the land will be ultimately one year in roots, and two in grass. No grain is cultivated.

The cultivation adopted is as follows:—In the winter, the second year's grass is pared off. This is trenched under, and the bottom of every trench is loosened by a fork, so that about 18 inches of soil and subsoil is stirred. In the spring a part is planted with early potatoes, a part with late potatoes, and the rest sown with beet and Swedish turnip. When the early potatoes are cleared off the land, by about the middle of July, it is sown with Italian rye-grass, and is cut once the same autumn. This part can be cut four times the year following, and twice or three times the second year. The land which

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grows the late potatoes, turnips, &c. is sown with Italian rye-grass in the spring following, (March,) and is cut twice that year, and occasionally three times. Dung is applied to the root crops in drills, as they are cultivated by that method, and kept clean by the hoe and the spade. The liquid manure is applied to the second year's grass. The labour is all performed by hand, with the boys of the school, except a few particular jobs, which are done by men. The master of the school assists at the labour, and has all the management of the land and the school. The boys, whether in trenching, delving, or hoeing, having each their lot to work upon, so that an idle boy is soon detected.

Parents and guardians of boys in this school, are expected to enter them for eighteen months, on the condition of the following rules:—

1st.—The boys are to be in the school three hours each day during six days of the week, and three hours at work on the land.

2nd.—In the school they are to be taught reading, writing, arithmetic, English grammar, and geography; and, in addition to Scriptural instruction, they will be taught the best methods of cultivating land.

3rd.—During the first three months, the boys received their instruction as a remuneration for their work; the second three months they are to receive sixpence per week in addition to their instruction, and an advance of threepence per week at the beginning of each succeeding three months.

4th.—Any boy being absent from the school, without permission from the master, shall for each half day forfeit one penny, to be deducted from his wages.

The great bulk of the Lancashire farmers are bad accountants; indeed, a large number of them keep no accounts whatever; and their profits and losses are only judged of by the weight of their purses at the end of the year.

This is certainly a very true criterian, but it gives a man

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no knowledge of the true cause either of his losses or his profits; it is thus that farmers in general are not aware of the great difference in the amount of the clear available marketable produce from a farm highly cultivated. To show this, in a clear point of view, I have taken the average amount of produce of three farms in this parish. The number of acres under arable cultivation on each farm is the average number for five years, 1834, 1835. 1836, 1837, and 1838, in which I valued the tithes of this parish. The amount of the produce of each farm, is also the average amount of those five years. The clover, potatoes, and turnip crops I did not value; of course the weight of these I have estimated by my own experience, but without having the power to test the accuracy of the estimate. I am well acquainted with the soil, and the cultivation of every farm in the parish; and, in every case, where I have tested my valuation of the crops, I have invariably found, that I had rather *over* valued the crops of the bad farmer, and *under-valued* those of the good one. This will show that the following statement will be rather against the highly cultivated farm, and in favour of the badly cultivated one; and, from my own experience in farming, I believe this will nearly always be the case in estimating the value of crops.

No. 1 is a farm under very good cultivation, No. 2 is a farm in an average state of cultivation for this county, and No. 3 is very badly cultivated; No. 2 is by far the best land, No. 3 is a better soil than No. 1, but is more difficult to manage.

The result of the practice on these three farms is, that the tenant on No. 1 began the world with little money, little learning, except the knowledge of labour; has had a little farm, has punctually paid the highest rent per acre, and is now independent of his farm.

No. 2 had sufficient capital to begin business; had a good common education given him; has had a large farm of good soil, and at a very reasonable rent; always conducted himself respectably, and perhaps has saved some money, but I have my doubts whether much or not.

The tenant of No. 3 with a good sized farm, of very fair

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soil, and at a fair rent, is now about on his "last legs." He had sufficient capital, but no education.

No. 1, TWO HORSES KEPT.

Average No. of Acres	Name of Crop.	Average Produce Per Acre.	Average gross amount of Produce.	Deduct for family Serv't's, horse. Corn & Seed.	Clear average amount of Produce to be Sold.	Average Price.	Clear value of Produce.
						£. s. d.	£. s. d.
5	Wheat.	42 Bush	210 bush	40 bush	170 bush	0 6 6	55 5 0
6	Oats.	60 do.	300 do.	150 do.	150 do.	0 2 9	20 12 6
8	Potatoes.	10 tons	80 tons	6 tons.	74 tons.	2 10 0	185 0 0
5	Clover hay.	3 do.	15 do.	8 do.	7 do.	4 0 0	28 0 0
23			Total Value of disposable produce..				288 17 6
			Gross Value per acre per annum, of disposable produce.....				12 11 2

No. 2, SIX HORSES KEPT.

						£. s. d.	£. s. d.
35	Wheat.	24 Bush	840 bush	145 bush	695 bush	0 6 6	225 17 6
30	Oats.	40 do	1200 do	600 do	600 do	0 2 9	82 10 0
20	Potatoes.	8 tons	160 tons	15 tons	145 tons.	2 10 0	362 10 0
6	Turnips.	15 do	120 do		120 do	1 0 0	120 0 0
10	Fallow.						
30	Clover Hay.	1½ tons	45 tons	24 do	21 do	4 0 0	84 0 0
133			Total Value of disposable produce..				874 17 6
			Gross Value per acre per annum, of disposable produce.....				6 11 7

No. 3, THREE HORSES KEPT.

						£. s. d.	£. s. d.
17	Wheat.	18 Bush	306 bush	75 bush	231 bush	0 6 6	75 1 6
17	Oats.	26 do	442 do	300 do	142 do	0 2 9	19 10 6
4	Potatoes.	4 tons	16 tons	4 do	12 do	2 10 0	30 0 0
13	Fallow.						
17	Clover Hay.	1 do	17 do	12 do	5 do	4 0 0	20 0 0
68			Total Value of disposable produce..				144 12 0
			Gross Value per acre per annum, of disposable produce.....				2 2 6

From the clear annual value per acre, in all the cases there are the rent, rates, the manure purchased, and the wages to pay.

I have taken no account whatever of the meadow and pasture land on these farms; but the produce from these portions of each farm will be about in the same proportion as upon the arable part. In short, on the farm No. 1, there are as many

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milch cows kept as upon No. 3, on which is three times the extent of grass land; and I have no doubt but each cow on No. 1 will give one third more milk and butter than those on No. 3.

No. 1 and 2 are very suitable soils for potatoes and turnips, and, in South Lancashire, have an advantage in this respect over No. 3. But No. 3 could be made to produce heavier crops of wheat, oats, beans and clover, with less manure, than No. 1.

The produce of No. 2 would be doubled by the same management as is applied to No. 1.

In South Lancashire there is a market for every description of farm produce, which is not the case in every part of North Lancashire; but carry out the same style of cultivation in a purely grain or grass growing district, and the result will be the same.

Every one will be aware of the great difference in the expense per acre in the cultivation of No. 1, to that of No. 3; and thus the tenant of No. 1 confers a double benefit on the country by the extra money he expends on labour, manure, implements, &c. besides the greater amount of produce to dispose of to supply the wants of the people. But notwithstanding his greater outlay, he will have a heavier balance in his purse at the end of the year. Rent, lays and taxes are the same, whether the cultivation be good or bad.

I am acquainted with a few farmers in South Lancashire, all of whom cultivate their farms in a more superior way than No. 1 is, taking *every department* into account. Some of these have been educated; and are in possession of a considerable amount of general information. The others are ignorant almost of every thing but their own business; but in this they are *thinking* and *acting* men. They have been taught to work at every branch of their profession, and can work as well as any servant on their farms; and it is on this knowledge of labour, by thinking and acting men, that so much of a farmer's profit depends. It is here that the profits of farming are made, if there be a proficiency of capital, to carry out every operation as it ought to be.

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The great drawback upon agricultural improvement, is, a want of capital according to the extent of land under cultivation. In this county I should say three fourths of the farmers are short of capital to manage their farms in the best style. The principal portion of them would make considerably more clear gain by employing what capital they have upon one half or one fourth of the land upon which it is now scattered. When a young man engages a farm, the plan adopted is generally to take one *too large* by one half for the capital he is in possession of. His motive for doing so is *good*, but it often turns out to be his ruin; or if not so, keeps him poor all his life. There is always great loss, with considerable trouble and vexation, in removing from one farm to another; therefore, when a young man engages a farm, if he be endowed with *common sense*, and *right feelings*, he naturally is possessed with a desire to remain upon the farm he first settles upon. Well, he argues thus, "If I take a farm of a *proper size* for my *capital*, I shall want a larger one in ten or fifteen years, I will therefore take a larger one at once, and trust to be able to improve it by degrees." His father and his friends have just the same ideas; although, if they would look back to their *own* experience, and by what they have *seen* and condemned in their neighbours, they would see the folly of putting a man upon a farm too large for his means. If a man be persevering, full of energy and enterprise, he will get through his difficulties, arising from want of capital. But every man is not of this stamp; and very often, when the farm is much out of condition, or is an inferior soil, and the tenant not very active, both he and the farm remain poor together while the connexion lasts. Sometimes, when a tenant sees and *feels* the difficulties he has to contend with, he allows his spirits to sink, and gets careless, and often turns to drink. It is, therefore, very dangerous, and often bad policy, to engage a farm too large for the capital of the tenant. This, combined with inferior education, and insecurity of tenure, forms the principal blockade against agricultural improvement.

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With respect to loans to the farmer, as a remedy for this insufficiency of capital, proper leases would be required, as a security for the repayment; but there seems to be a general distrust of farmers. Merchants and manufacturers can borrow money to almost any amount, to spend where the *risk is far greater*, than in improving land; and the same with public companies. However, I give it as my firm opinion that ten per cent may be realized by a judicious outlay of capital in improving the land of this county.

Having given in detail a description of the prevailing soils, manner of cultivation, and a general account of the agriculture of this county, it perhaps may not be out of place to offer a few concluding remarks as to the general management of the property in the county, with some few suggestions for its improvement.

Until within a few years back, the management of estates was very imperfect. Leases were made, agreements for yearly tenures drawn up, in which both parties promised to perform certain things, but which neither of them fulfilled. If the rent came on, the rent day, nothing more, was looked to. Some eight or ten years ago, I could have pointed out scores of farms on which neither landowner or agent had been for thirty years. The leases and agreements of former times are unfit for these times; they were drawn up by men who knew nothing of land and its cultivation, or of the wants of the farmer, and the difficulties he had to contend with; nor are those of the present day what they ought to be, for many clauses are improper; and there is too much of the slang of a learned profession in them, where there should be merely a plain statement of what is required. However, there appears in this respect, a "better time coming;" for both landowners, agents, and farmers, seem more alive to their duties, as well as to their interest.

Upon a large estate, it is not necessary that the principal agent should be a practical agriculturist; but all that class of agents who have to point out, and to superintend improvements, and to see that the tenants perform their parts, or do

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not injure their farms, it is quite necessary that they should be practical men, and the landowners are beginning to see this. No man under thirty or thirty-five years of age will do for this post, as it *will not do if he be a mere theorist*. Let one of this description of men farm a clay soil ten years, and he will see things quite different to what he expected; besides, no tenant has any confidence in such men.

I have frequently heard great complaints of farmers ruining their farms out; and from my own knowledge, there has been great cause for these complaints; but, who have been in fault but the landowners, or their agents, in allowing them to do so? I am quite aware that this has often been seen in due time; but from very proper motives, the tenant has been indulged by another, and another year's trial; but very often, in these cases, the tenant has never been overlooked until he has begun to fall in arrears, and perhaps not till this has been the case a year or two. Very frequently there are disputes in these, and in other cases, as to the state the farm was in at the time of the tenant's entry, when there is nothing to refer to, but the memory.

To prevent a tenant running out a farm, the agent should look over it at least once a year, but twice would be better. If only once, it should be in summer, or early in autumn. He should see every field, and make a note of the kind of crop upon it; and also if there be anything either particularly good or bad in the cultivation of it, and in the general management of the farm. If any improvement has been made, by drainage, &c., let a note be made of it, and say on what particular part of the farm it has been done. If this were done, few farmers would attempt to ruin their farms out, and there would always be something to refer to in case of dispute.

A complete and proper system of Tenant Right is likewise universally required, in order to place the relations of landlord and tenant upon a mutual and more satisfactory footing. The following outline is what I consider ought to be the basis of such practice. Supposing a landowner making arrangements with his tenants under a law or lease securing the proper in-

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terest of both. Let a particular valuation be made of each farm, and a complete report made out. In these documents, the true state of every field should be entered, whether wet, dry, clean, foul, fresh, or has been long under tillage, old pasture, upland meadow, water meadow, &c. If in tillage, under what crop, and when manured; also the state of the fences, ditches, gates and posts to every field; the state of the water courses, roads, buildings and yards, with the distance from the turnpike road and the next market town. It would also be as well to state the description of the soil and subsoil in each field. This would only want once doing, and the nature of these could always then be seen by merely referring to the report. At present it is not expected, or usual, for a valuer to give all these particulars to his employers, under a proper arrangement between landlord and tenant, it would be necessary that all particulars should be given in a clear manner, with the name, contents, and the annual value of each field or parcel of land; also the annual value of each building, with the description and measurement. These items would make up the gross annual value of each farm in the *state it was then in.*

From such data as the above, coupled with what will be the supposed average price of such produce as the farm is best adapted for producing; is, or ought to be, the ground work of every valuation, whether for selling, buying, or letting.

From the gross annual value, should be deducted the tithe rent charge, if any; the poor rates, highway rates, church rates, &c. The average of these, for seven or ten years preceding should be taken, and deducted from the gross rental; the remainder will be the fair rent payable to the landlord for the whole of the premises, if the landlord takes no part of this business upon himself.

When these arrangements are completed, and the tenant is deficient of capital for making considerable permanent improvements, and the landlord *can spare the money*, let him do so, and receive a per centage on the outlay. The amount of this per centage should be according to the permanency of

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the improvement. In some instances it should be low; and also a permanent addition to the rent; in other cases it should be higher, and then cease in a given number of years; as there are various improvements, which are termed permanent, which, strictly speaking, are not so. In cases where the landlords make the improvements, the tenant is at liberty to leave the farm any year without sacrifice so far as to any improvements. Whether the tenant has the cash himself, or he borrows it for making any improvements, and he and his landlord cannot agree together, or at the expiration of a lease or a change of tenancy, a reference to the original report of the farm will make any arrangement easy in ascertaining the amount due to the tenant or to the landlord for any injury or waste upon the premises made by that tenant.

The Lancashire Farmers have not been assisted as they ought to be. Look at the ill contrived, inconvenient farm yards and buildings, the crooked fences and small fields, yet to be seen over a great extent of the county. To regulate all these is the work of the owner of the soil; and also to drain it, except very long leases are granted, and these upon proper principles, that is, without any clauses except such as a tenant ought and can fulfil. In cases of long leases, great care should be taken that the rent put upon the farm is a fair one; and the owner should be sure the party has sufficient capital to carry out all improvements required; which ought to be particularly specified in the lease.

The landowners of Lancashire have had an idea, that an ignorant hard working man could extract more clear gain from the land, than a man with a more cultivated mind. This is most decidedly an error, almost in any profession, but more so in that of agriculture. Land is a very intricate machine. The curious and the various parts of which it is composed, and the variety of ways on which it is acted by the atmosphere, as respects heat and moisture, its local situation as respects elevation and exposure, all require considerable study, combined with a no small portion of practice, to enable the farmer to arrive at anything like perfection in his profession, even if that ever can be attained.

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Seeing that agriculture is so intricate a science, surely it will be evident that labour alone without knowledge, that is, without a clear understanding of the nature of the machine a man is working upon, he cannot obtain the same amount of labour, and capital, as one whose mind is expanded by reading and study, *combined with practice.* There are exceptions to this rule, but they *are exceptions.* It is not necessary for a farmer to be what the *world calls learned, but learned in his profession;* and, in his practise, books will be of great service. The worst books on agriculture I ever read, I found less or more worth storing.

The generality of farmers want their ideas more expanding, but here, generally, if a young man can read and understand a paragraph in any book, on any science; can write his own name off hand, without scratching; or cast up an account readily, without a blunder, he is then thought too clever for a cultivator of the soil. He must then be put to some trade, or learned profession; have clean shoes every morning, white hands covered with gloves, at least *one of them*, and the other occupied with the vacant glove; a fine coat and hat, with a gold or silver watch guard, and a cigar in his mouth. Oh! it is a pity such a clever man should be a farmer, it will be said; and, consequently, he is a farmer no more, his *back* gets *stiff*, and it remains so for ever after. And if this solomon should happen to fail in his business, or profession, some friend or other is saddled with him, or the country at large, in having some place or office given him, for which he is not qualified. There are, of course, exceptions to this rule.

An excellent plan for landowners would be to send a few of the farmers' sons from his property, after they had acquired a certain portion of learning, into some well cultivated district, and there, not to live like a gentleman, but to work exactly like a labourer, and to live as he does, but to associate with the farmer's family in the evening, and on sundays. The only relaxation from labour, different from another labourer, should be, going to market or fairs now and then with the master, and one hour every day, to keep the farm account;

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books, and a journal. These will not only instruct him, but give him habits of regularity, which are of immense importance to youth in any line of life. Neither should recreation be neglected; care should only be taken that it be as innocent as possible. He should be furnished with moral, but entertaining reading, until he has got a taste for it.

Agricultural Schools, when properly conducted, would, I feel convinced, be of great service, as a means conducive to the improvement of agriculture. They should be in situations where the land attached to them was of different varieties, and should not be in the best climate. One situated in a good climate, and on good soil, would do little good, and in many cases, might do great injury. One that is qualified to farm inferior land, in an inferior climate well, is qualified for every other situation; but hundreds have been ruined by removing to a worse soil, or into a worse climate, than that in which they have been brought up.

There are many situations, both in Lancashire and other counties, where six or eight varieties of soil would be comprised in one hundred acres, and in situations suitable as respects climate; in short, the soil generally varies most where the climate is the worst. Each portion should be under distinct management, that is, each under a separate rotation, such as was considered best adapted for the nature of the soil; and to make any alteration in the management from time to time as would be considered to be an improvement. Distinct accounts of each portion of land should be kept. Suppose a few boys only worked a few hours upon one of these divisions, let that division be debted to the amount, and so with everything else. The same with the produce on the credit side.

When I began to farm, I kept a Dr. and Cr. account with every field. I had not each field in a separate rotation of crops, but I had one for the whole farm, although it was not all adapted for the same rotation. I had six varieties of soil, but none of them of the best, and situated within a few miles of the top of the range of mountains which divide Lancashire from Yorkshire. The field books afforded me very great

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satisfaction, and I feel convinced, that the experience I thus gained has been of great service to me in the way I have since been engaged.

Agricultural schools are infinitely more preferable to model farms. Education on cultivation is wanted. There are excellently managed farms in every county, and these may be called model farms. Every one can see the management, together with the results.

If I were a landowner, I should first adopt some means by which, in another generation, my tenants should be better informed in the nature of their profession, and on other general subjects. I should endeavour to raise these from my old stock of tenants, as men generally do best when they are born upon the soil, and are attached both to it and to the owner. I would then ascertain which of my present tenants had capital sufficient to put their farms in a proper state of cultivation. To these I would give leases of fourteen or twenty-one years, on just and liberal principles, but specifying *in the lease*, what improvements should be made. To all other tenants who had *not capital*, but who were *industrious* and *careful*, I would either *lend them*, or *spend myself*, to the amount of half a year's rent every year, on improvements, till the whole required were completed. In either case I should charge five per cent. This refers to permanent improvement. All tenants who have neither *care*, *industry*, or *capital*, the sooner they are got rid of, the better.

When a landowner makes the improvements upon his estates himself, they would generally be done quite as well, and at a less cost, than by the tenant. He could carry them on upon a larger scale, and have a proper person to superintend the whole, which, in draining, is of great importance.

To conclude, let landlords do their duty to their tenants and estates. Give every encouragement to improvements, and assist in a reasonable way, all those who exert themselves. But, to say that the Lancashire farmers are not improving in their agriculture, is *not true;* and to say that they are not improving as fast as their *southern* neighbours is also *not true*;

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yet, this is no reason why they should not make a more rapid and extended progress. Agricultural improvement is universally demanded, in order to compete with the progress of the age. With an improved system, my firm opinion is, that the surplus produce of the greater number of farms and districts, both in this and other counties, might be as much as doubled, and without going very deep into *science*. The latent energies of a great mass of the agricultural community, requires arousing into action, there being a great deal more known in agriculture than is practised: some for want of *means*, and others for want of a will.

AGRICULTURAL SOCIETIES.

The Manchester Society was instituted in 1767, and comprised a district of forty miles around Manchester; of course, extended into Cheshire, Yorkshire, and Derbyshire; although this county and Cheshire may be said to be the only field upon which its operations were exercised. It continued until November, 1847.

Wilbraham Egerton, Esq., of Tatton Park, Cheshire, was the patron and president for a considerable number of years, previous to its amalgamation with the Liverpool Society. For many years at the commencement, Mr. John Ashworth, of Turton; and afterwards his son Thomas, were the secretaries. Before its close, Mr. C. R. Brady, of Hazel Grove, Stockport, was the secretary for several years; and Mr. James Dixon, now of Hopwood, and myself, were inspectors. This society gave premiums annually for best cultivated farms, crops, draining, and other permanent improvements; also for cattle horses, sheep, pigs, implements, &c.

The Liverpool Society was instituted in 1830, and comprised a district of forty miles around Liverpool; consequently, a portion of Cheshire and North Wales came within the range of its circuit. It continued until November, 1847.

The Right Hon. the Earl of Derby was the patron; the Right Hon Lord Stanley, president; Mr. James Green, of Prescot, treasurer; Mr. Richard Ledger, of Knotty Ash,

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secretary; and, since 1843, Mr. Henry White, of Warrington, and Mr. William Longton, of Rainhill, have been appointed Inspectors. It gave premiums every year, for similar purposes as the Manchester Society.

In November, 1847, these two societies were amalgamated into one, and entitled the "Manchester and Liverpool Agricultural Society;" extending thirty miles around Newton-le-Willows, thus comprising all South Lancashire, the greatest portion of North Cheshire, and all such parts as are within that distance.

The patrons of each of the two previous societies, are the joint patrons of this. Mr. Green is the treasurer, Mr. White the secretary. Mr. Brady and Mr. Longton were the inspectors for 1848; and, at this time, Mr. Dixon and myself fulfil those capacities.

Premiums of the same description, and for the same purposes, are given, which the two societies previously gave. The annual shows are to be held, alternately, at Manchester and at Liverpool; or at any other place the committee may think proper. The first show was held at Manchester, in September, 1848,; the second at Liverpool, in September, 1840, and the third is to be held at Warrington, in September, 1850.

The Royal North Lancashire Agricultural Society was also instituted in 1847, and is to be preambulating with respect to its annual meetings and exhibitions. The first show was held at Lancaster, in October, 1847; at Preston, in 1848; and at Lytham, in September, 1849. It extends over the whole of North Lancashire.

Her Most Gracious Majesty the Queen is the patroness; Thomas Clifton, Esq., president for 1849; William James Garnett, Esq., Bleasdale Tower, and Thomas Birchall, Esq., of Ribbleton Hall, are trustees; Messrs. Peddes, Fleetwood, and Peddes, Old Bank, Preston, treasurers; and Mr. George Hunt, the Grange, Broughton, is the secretary.

Premiums are awarded every year for the best crops of drilled beans, swedish turnips, common turnips, laying down land to grass, ploughing, cutting hedges, general stock and

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farm management, cheese, roots, seeds, implements, and live stock.

This society is the amalgamation of the Lancaster, Preston, and Lytham societies.

The Ashton Agricultural Society offers premiums for crops, stock, cultivation, &c., to the tenantry of His Grace the Duke of Hamilton and Brandon, R.T.T., who is the patron and president of the society. Mr. John Welch, Cabus, near Garstang, is the secretary.

There is an Agricultural Society at Ulverstone, and another at Dalton, in Furness; at Radcliffe, and Tottington, near Bury, in South Lancashire; one at Haigh, near Wigan; at Hale, and at Walton, near Liverpool; besides what has been before named at Newton-le-Willows, and at Ashton-in-Mackerfield.

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APPENDIX.

The following are reports of the inspectors, to the Manchester and Liverpool Agricultural Society, of the farm management, improvements, and green crops, of the *successful competitors*, for the premiums offered by that society in the year 1849. These reports were read at the annual meeting of the members in Liverpool on September 20th, 1849.

Inspectors,—Messrs. Wm. Rothwell, and James Dixon.

FOR THE BEST CULTIVATED FARMS.

Premium 1st.—To the owner and occupier of *not less than* 150 *acres*, the society's silver medal. Awarded to Mr. John Owen, of Lower house, West Derby, near Liverpool.

Mr. Owen's farm contains 153 acres. The soil is a strong brown loam of a fair depth, and resting on a stiff clay subsoil. The farm has a slight inclination to the East, and the elevation above the sea, perhaps 50 feet. This year it is occupied in the following crops.

	A.	R.	
Old meadow and pasture, ...	10	2	very good and clean.
Clover and seeds mown, ...	68	2	ditto ditto.
Wheat after potatoes and turnips	32	2	very heavy & clean crop

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Oats after Ley, 7 acres do. do. Wheat 13 "	...	20 0	ditto ditto.
Potatoes, 7A. 1R. Turnips, 9 1 Beet, 2 0	Green Crops,	18 2	exceedingly clean and well ordered.
Orchard and Garden, ...		1 2	well kept and fruitful.
Homestead and roads, ...		1 2	good order and neat.
		153 0	

Rotation of crops, 1st potatoes, turnips, and beet, after grass or oats. 2nd, wheat, *one third* sown with clover and grass seeds. 3rd, *one third* clover and grass seeds mown, and two thirds oats, sown with seeds. 4th, 5th, and 6th, cut for hay.

Stock kept are 7 horses, 1 bull, 14 dairy cows, improved short-horns, 5 pigs, total 27. In September and October every year, grazes from 100 to 200 sheep on after-grass. In summer the stock is kept on pasture, or clover in the stall, grains and Egyptian beans. In winter on hay, grains, turnips, small potatoes, beet, oilcake and a little bran.

About 200 tons of manure is made on the farm every year, which is principally applied to the potato, turnip, and mangel wurzel, crops; and the remainder to meadow. Purchases about 600 tons of stable dung, at Liverpool, at a cost of 6s. per ton, exclusive of carting. This is mostly applied to the meadows.

Has drained the whole of the farm since he entered upon it, 15 years ago, at the rate of 10 acres a year. The drains average 6 yards apart and 3 feet deep. The main drains are open stone drains, and the parallel ones filled 1 foot with cinders. The whole cost about £7. per acre.

14 acres have been marled with 100 cubic yards per acre. The general improvements have been road making, filling up pits, draining, eradicating old fences, planting new ones, and erecting buildings.

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Mr. Owen's farm lying near Liverpool (5 miles) a considerable portion of the hay, straw, and roots are disposed of there, and manure purchased in return. There is no urine tank upon the premises; but all the liquid manure is carefully collected and thrown over the dung heaps, and other absorbants at intervals, which Mr. Owen considers quite answers as good a purpose, the manure being of far greater value than if the urine were drained into a tank.

The land, when sown down, lies 3 years and mown every year, but has two dressings of dung, or compost, during that time.

The farm has been remodelled: not a vestage of any old fence remaining. New thorn fences have been planted, and which are well kept. The fields are large and of an oblong square, with pools constructed so that each will serve 4 fields, with a constant supply of water from the drainage into each. The ditches and water courses are clean and open. Carriage and cart roads, gates, posts, foot paths, styles, farm yards, &c. in perfect order.

The following is thought worthy of recording, although no premium was awarded. There is very considerable merit in the cultivation of the farm, and in some respects peculiar. So far as the arable part, quite equal to Mr. Owen's farm, but a little deficient in the grass part. It is owned and occupied by J. I. Blackburne, Esq., of Hale hall, the farm is within the park, and under the management of Mr. Nixon.

It consists of 236 acres; lies on the banks of the Mersey, 10 miles from Liverpool. Is very gently undulated, but every part so far above high-water mark as to afford sufficient fall for perfect drainage. The soil is light sand and peaty loam, and the subsoil on some parts sand, and on other parts clay and sand. In 1849 was cultivated as follows.

	A.	R.	P.
Old meadow and pasture, ...	92	0	0
Clover and seeds mown,...	45	0	0

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Wheat after potatoes, ...	9	0	0	...	20	0	0
do. after turnips and beans,	11	0	0				
Oats after ley,...					24	0	0
Barley after turnips, &c.					12	0	0
Beans, ...	5	0	0	Total Green Crops	41	0	0
Pease and vetches,...	2	0	0				
Potatoes, ...	20	0	0				
Turnips, ...	10	0	0				
Beet, ...	2	0	0				
Carrots and Cabbage,	2	0	0				
Homestead, roads, &c....					2	0	0
					236	0	0

The rotation adopted is 1st, oats after clover or grass. 2nd, green crops cultivated in drills. 3rd, wheat or barley. 4th, clover and seeds mown. 5th and 6th, pasture.

The stock kept consists of 8 horses, 25 colts, (ley stock) 3 bulls, 12 dairy cows, improved short-horns, 100 heifers, (ley stock) 5 calves, 100 sheep, 40 pigs, total 293.

The horses are fed on steamed food in the winter, and green food in the summer, with one bushel, each, of crushed oats and beans per week.

From 300 to 400 tons of manure is made every year on the farm, and which is entirely used for green crops. The liquid manure is received in tanks, and carried by water-carts to the meadows. From 8 to 10 tons of guano, bones, superphosphate of lime is purchased annually, and chiefly used to grass land, turnips, and early potatoes. About 100 acres have been drained with tiles, the drains from 3 to 5 feet deep.

A considerable portion of the land is old grass, and occupied in grazing stock. The herbage of some portions of this might be much improved, both in quantity and quality, by the application of marl, or sea sludge, (which lies convenient) lime, or bone manure. All these improvers have been applied

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to portions of it, and they all appear to answer well. Some parts of the farm, which had been old grass, and unproductive, has been very much improved by breaking up, and undergoing a judicious course of cropping, and then laid down again to grass. The management of the arable part of the farm could not well be better. The corn crops were all very heavy and very clean, the barley too good. The beans an average crop and tolerably clean. Potatoes, turnips, and beet looked exceedingly well when inspected in August, very clean and well ordered. Cabbages a heavy crop and ready for cutting. A considerable breadth of early potatoes are planted, which are sent early to market, and the land afterwards either planted with swedes or sown with yellow turnips, 1½ acres of potatoes early disposed of produced £70, and, on the same land a promising crop of swedes was growing when I and Mr. Dixon inspected the farm. On other portions where the potatoes had been sold off later, healthy crops of yellow turnips were growing. The fences, roads, &c. were well kept, and there is little doubt but a fair and favourable balance sheet could be shown.

PREMIUM 2nd.—To the owner and occupier of *not less than* 60 *acres*, the society's silver medal. Awarded to Richard Watt, Esq.

This farm is situated in Speke, 8 miles south of Liverpool, and near the shore of the estuary of the River Mersey. It inclines gently to the river and sufficiently elevated above it as to afford perfect drainage. The soil is a rather light sandy loam, with sand and marl for subsoil. This year it is occupied in the following crops.

	A.	R.	P.
Pasture, ...	11	1	0
Old meadow, ...	11	2	0
Clover and seeds, ...	48	0	0
Wheat after green crop, ...	17	2	0
Oats after ley, ...	2	0	0

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Barley after wheat,...	12	2	0
Potatoes, ...	10	1	0
Turnips, ...	2	2	0
Beet, ...	2	0	0
Vetches, ...	0	3	0
Orchard and Garden, ...	1	0	0
Homestead,...	1	2	0
	120	3	0

The rotation adopted is, 1st, potatoes, turnips, and beet. 2nd, wheat drilled. 3rd, barley drilled, at 6 inches, and sown with clover and grass seeds, and then remains 4 years in grass, and is mown every year for hay.

Stock kept consists of 5 horses, 6 dairy cows, 3 heifers, 1 calf, and 3 pigs, total 18. Cattle pastured in summer, and in winter fed with hay, roots and bran. Horses pastured in the summer, and clover and vetches in the stall; in winter hay, boiled turnips, potatoes, bran and oats. Makes about 130 tons of manure every year, which is applied to the potato crop. Purchases about 480 tons of night soil and ashes, at a cost of 2*s*. 3*d*. per ton, exclusive of carting. This is mostly applied to clover and seeds. 2 tons of guano applied mostly to grass land. 80 tons of cow manure purchased at Liverpool at 6*s*. per ton and applied to the potato or turnip crops.

The whole of the farm is drained with stone and tiles. The drains from 30 inches to 10 feet deep, and the distance according to the depth. The deeper the drains, and the more distant. The subsoil between the marl and the cultivated soil, is a white sand, and the drains are cut through this and one foot into the marl. The tiles or stones, are covered with the grass sods to prevent the sand getting in. 80 rods of ditches have been drained and filled up this last year. Some of these 10 feet deep.

The farm is mostly under the convertable system of cultivation; and being within the range of Liverpool, a great

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portion of the produce is sent to that market, and manure purchased in return; which can be conveyed to the farm by water carriage.

The first crop of clover this year very heavy, but the second crop, and aftermath light, for want of rain. Wheat and barley fine heavy crops, and very clean. Root crops all very heavy and promising, and were very clean. Ditches, water-courses, roads, gates, yards, &c. in good keeping. Mr. John Mc.Farlane has the management of this farm.

PREMIUM 3rd.—To the tenant and occupier, *principally dependant upon farming,* and *not less than* 150 *acres,* £12.

Awarded to Mr. Wm. Longton, of Rainhill, near Prescot.

This farm contains 160 acres, and held on a yearly tenure, except 50 acres, which is on lease for 7 years. The soil on some parts is a sandy loam, resting on a porous subsoil; and on other parts a rather strong loam, with a broken clay subsoil. Surface slightly undulated, and perhaps 100 feet above sea level.

The farm is disposed as follows,		A.	R.	P.
Pasture, ...		26	0	0
Clover and seeds mown,...		22	0	0
Meadow not irrigated, ...		26	0	0
Wheat after potatoes, 18A.				
do. after turnips, ... 8	... ...	27	0	0
do. after beet, ... 1				
Oats after ley, ...		24	0	0
Beans, ...		5	0	0
Potatoes, ... 16A.				
Turnips, ... 10	... ...	27	0	0
Beet, ... 1				
Orchard and garden, ...		1	0	0
Homestead and roads, ...		2	0	0
		160	0	0

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Rotation adopted is, 1st, oats. 2nd, green crops. 3rd, wheat, sown with clover and seeds. 4th, mown for hay or stall feeding; then pastured two or three years.

Stock on this farm consists of 6 horses, 2 colts, 2 bulls, 15 dairy cows, 6 heifers, 5 calves, all improved short-horns, 25 ewes, 24 lambs, 8 pigs, total 93 head. The cattle are fed on pasture in summer; and in winter on chopped hay and straw steamed, with oilcake. The horses are fed in summer with green food in the stall, with a little corn; and in winter with chopped hay and beans steamed. About 200 tons of manure is annually made and applied to the green crops. The liquids collected from the house and farm yards, are applied to the meadow land. He has bought on an average, for the last three years, 320 tons of stable manure annually. This has cost 6*s*. 6*d*. per ton, exclusive of carting. Has also bought, annually, 130 loads of night soil for the last three years, at a cost of 6*s*. per load, and 3 tons of Peruvian guano. These have been applied to the green crops, except a part of the guano, which has been applied to pasture land. Mr. Longton has drained, within the last year, 26 acres, and in the last ten years the *whole of his farm*, entirely at his own expense. The main drains are laid with tiles or stones, and the parallel ones with cinders, and covered with a grass sod. These from 30 to 36 inches deep.

The general improvements have been, building a back kitchen and putting up a water cistern, 13 feet long, 9 feet wide, and 5 feet deep; paved most of the farm yard, and put down a reservoir for the liquid manure; soughed and filled up most of the ditches on the farm, and levelled down and eradicated 18 old hedges, and reduced the number of fields from 47 to 22; planted near 2 miles of new thorn fences, and found posts, rails, nails, and thorn quicks; filled up 19 old pits; trenched and rid up the brushwood around several others; made a cindered road through one-half of the farm, for the more convenient occupation of it. The whole of these

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improvements have been done at the expense of the tenant.

The different crops on the farm were very clean and heavy. The clover, turnips, mangel wurzel, and potatoes, exhibited as much luxuriance as, in the opinion of the inspectors, it is desirable to obtain. The beans were cultivated in 30-inch drills, and were exceedingly clean and well set with pods. Half had been sown in the preceding autumn with winter beans. These were cut in August. A considerable amount of hay, straw, and roots, are sold every year.

Inspected, August, 1849.

Mr. Robert Birch, of Netherton, near Aintree, was one of the claimants for the 3rd premium, awarded to Mr. Longton; and the merits of each were so nearly balanced, and the difficulty of deciding so great, that Mr. Birch had the *society's silver medal* awarded to him, with liberty to compete in 1850.

The point on which the decision rested was, that Mr. Longton had made the *entire improvements at his own cost,* which was not the case with Mr. Birch; although, he, I believe, has spent *as much per acre, at his own cost,* as Mr. Longton, as more new fences had been planted on Mr. Birch's farm, and the draining of a more expensive nature. I consider it due to Mr. Birch's abilities and perseverance, and to his liberality of outlay, to give here a report of his management.

Mr. Birch's farm contains 242 acres, and is held on a yearly tenure under Lord Sefton. The soil is a light sandy and peaty loam, and the greatest portion of the farm resting on a sandy subsoil, surface slightly undulated, and about 80 feet above sea level. It was under the following cultivation,

In pasture, ...			12A.
Clover and seeds mown, ...			17
Old meadow irrigated,	38A.	... ...	56
ditto not irrigated,	18		

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Wheat after potatoes,	31		
ditto turnips, ...	15	... ...	52
ditto vetches and beans	6		
Oats after leys, ...	14		
ditto wheat, ...	5	... ...	19
Potatoes, ...	40		
Turnips, ...	12	... ...	53
Mangel wurzel, ...	1		
Barley after wheat, ...		... ...	18
Beans, ...	...	... ...	11
Orchard and garden, ...	...	... ...	2
Homestead, &c. ...	...	... ..	2
			242

Rotation followed is, 1st, green crops. 2nd, wheat. 3rd, barley or oats, sown down. 4th, mown for hay and soiling, then pastured two or three years.

The stock consists of 10 horses, 2 colts, 1 bull, 12 dairy cows, 14 heifers, 10 calves, all improved short-horned, and 18 pigs, total 67. Cattle pastured in summer, and fed in winter on hay, turnips, and oilcake. Horses in the summer on green food in the stall, and in winter on hay, roots, and corn.

Makes about 350 tons of dung annually on the farm, and is applied to the turnip crop. The whole of the liquid from house, piggeries, and yards, collected, and applied to the different grass crops by a water cart. About 900 tons of horse and cow dung, at a cost of 6*s.* per ton, 200 tons of night soil, at 2*s.* 6*d.*, and 7 tons of guano, at £10. (all exclusive of carting) is annually purchased.

Within the last three years has made 30 *lineal miles* of drains with open tiles on slate soles; his landlord paying *half the expense* of the materials. In 1848 had a premium awarded for draining 19 miles. He also has made a capital and

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convenient paved road through the centre of a great portion of his farm; his landlord paying for the stone. Has eradicated nearly all the old fences, and planted, where required, new ones; landlord finding rails and posts: and entirely remodelled the fields, adopting them in size to the extent of his farm. In 1848 gained a premium for eradicating 4,864 yards of old fences. Has drained nearly the whole of it; and in destroying the old fences, clearing waste land, and filling up pits, has obtained 8 acres of land, which is cultivated. The whole has been done within the last five years, and at *his own expense,* except the items before named.

All the crops on this farm were remarkably clean. The wheat a full uniform heavy crop, and no part of it lodged. The barley equally good with the wheat. Oats a fair crop, but not beyond; apparently had been injured by drought. Fences kept clean, having evidently constant attention paid to them. A considerable amount of hay, straw, and roots, are sent to market. *Inspected, August,* 1849.

PREMIUM 4th.—To the tenant and occupier of the best farm of not less than 100 acres. and principally dependant upon farming, £8. Awarded to Mr. Thomas Atherton, of Speke, near Liverpool.

His farm contains 148 acres, and principally a light sandy loam, with a sandy or gravelly subsoil, surface nearly level, and near the shore of the estuary of the Mersey.

Cultivated as follows:—20 acres in pasture; 63 in meadow, clover and seeds; one acre of the meadow irrigated; wheat after potatoes 22 acres; barley after wheat 20 acres; potatoes 10 acres; turnips 2 acres; beet 3 acres; carrots 3 acres; total green crop 18 acres: orchard ½ acre; homestead and roads ½ an acre.

Rotation, 1st potatoes. 2nd, wheat. 3rd, barley, sown with seeds, then mown three years, and pastured one.

Stock consists of 6 horses, 1 colt, 1 bull, 14 dairy cows,

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8 heifers, 3 calves, all improved short-horns, and 5 pigs, total 36. Cattle pastured in summer, and fed on beet, turnips, hay and crushed corn. Horses soiled in summer, and on roots, hay, and corn in winter. Makes about 250 tons of manure on the farm annually, which is applied to the potato crops. All liquid manure from house and farmery collected and carted upon the grass land or thrown over the compost heaps. Buys 800 tons annually of cow, horse dung, and night soil. This is applied to green crops and mowing-land.

Has drained 12 acres the last 3 years, landlord finding tiles. Has also within the same time filled up 3 large pits at his own expense, and eradicated 100 roods of old fences, and planted a considerable length of new ones.

Crops all very clean and showing great yield of corn, &c. Fences cut in a uniform neat manner. Garden and orchard in first rate order and condition. Buildings and yards kept very clean. A great portion of the hay, straw, and roots, is sold at Liverpool.

Inspected, August, 1849.

PREMIUM 5th.—To the tenant and occupier, *principally dependant on farming,* for the best farm of not less than 60 acres, £5. Awarded to Mr. James Langshaw, of Speke, near Liverpool.

The farm contains 99 acres, mostly a good loam resting on sandy clay Is held on lease, which expires in 1852. Surface nearly level, and at no great distance from the shore of the estuary of the Mersey. Is cultivated as follows,

			A.	R.
Pasture, ...			11	0
Clover and seeds mown, ...			19	0
Irrigated meadow, ...			2	0
Meadow not irrigated, ...			22	2
Wheat after potatoes,	11	0		
do. after turnips,	2	2	13	2

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Barley after Wheat,	...	...	15 0
Beans, ...	...	...	2 0
Potatoes, ... 10 0	...	...	12 3
Turnips, ... 2 3			
Orchard, garden, &c.	...	...	1 1
			99 0

Rotation, 1st, potatoes and turnips. 2nd, wheat. 3rd, barley, sown with clover and seeds. 4th, mown. Then mown or pastured three years.

Stock on this farm, 5 horses, 8 dairy cows, 6 heifers, 7 calves, 32 pigs, total 58. Cattle and horses pastured in summer with green food given occasionally. In winter on cut hay, turnips, and beet, steamed.

Makes annually 250 tons of manure on the farm. All the liquid manure from the establishment is collected, and carted upon the grass land. Buys 100 tons of horse and cow-dung every year, cost price 6*s.* 6*d.* per ton; 350 tons of night soil at 2*s.* 6*d.*; and 2 tons of guano. Best manure is applied to potatoes and turnips; night soil to mowing land, and the guano to young clover.

In the last three years has laid 7,840 yards of drains; the landlord finding tiles.

The crops all very clean, both corn and root crops. Corn very heavy full crops, and the green crops exceedingly healthy and vigorous. The fences, gates, roads, yards, &c. kept in correct condition.

Cultivates a considerable breadth of early potatoes, after which swedish turnips are planted, or yellow ones sown. This is common with most of the Speke farmers.

Inspected August, 1849.

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FOR DRAINING.

PREMIUM 11th—To Mr. James Birch, Edge farm, Sefton, near Liverpool, (tenant to the Earl of Sefton,) as occupier of not less than 150 acres, for draining the greatest quantity in proportion to the size of his farm, £8.

Mr. Birch's farm contains 160 acres, and he has drained within the twelve months, 42 acres, part with pipe tiles, and part with open tiles, on slate soles. Soil, on part of the land drained, is a sandy loam; and on the other part, a clay loam. The subsoil clay, full of sandy fissures, and also a porous substance between the clay and cultivated soil. The depth of the main drains 38 to 40 inches, and of the branch drains 36 to 38 inches. These latter taken up the incline of the land, which is very slight, the whole farm being nearly level. The branch drains are from 21 feet to 24 feet apart. The whole length in lineal yards, 24,560, or *nearly* 14 *miles*; his landlord payng half the expense of materials; Mr. Birch carting them, and doing the entire work at his own cost. In all other respects he is a "*first class*" farmer.

PREMIUM 12th.—To the tenant and occupier of *not less than* 100 *acres*, who shall drain the greatest quantity, £6. Awarded to Mr. John Birch, of Orrell, near Liverpool.

Mr. Birch's farm contains 121¼ acres. He drained between May 1848, and May 1849, near 50 acres. The soil a black sandy loam, with foxbench and day subsoil. Some part of the draining has been done with open stone drains, and the remainder with open tiles, on slate soles.

The whole length laid within the year is, 19,000 yards, (11¼ miles). The mains 38 to 40 inches deep, and the parallel ones 34 to 38 inches deep, and laid down the incline of the land, which is but slight, at from 18 to 36 feet distance, according to the nature of the subsoil; his landlord, Earl of Sefton, pays one-half the expense of the materials. The

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work is done in a proper workmanlike manner; and the ditches, watercourses, and outfalls, well cleaned out. The effect on the land and crops is great. Some parts of the land had been partially drained before, but not sufficiently deep. Mr. Birch is an excellent farmer in every respect.

PREMIUM 13th.—To the tenant and occupier of *not less than* 70 acres, who shall drain the greatest quantity, £4. Awarded to Mr. Wm. Henshall, of Sutton, near St. Helens.

Mr. Henshall's farm contains 81 acres, and has drained 16½ acres within the twelve months. The soil is a strong brown loam, with a subsoil of clay and sand. The length of drains 14,610 yards. 4½ acres laid with open tiles, on slate soles; and 12 acres, except the main drains, with cinders. The cinders 9 inches deep, with a grass sod at top. Mains, 40 to 42 inches deep; and parallel ones, 36 to 40 inches deep, down the incline of the land, and from 5½ to 6 yards asunder; landlady, Mrs. Hughes, paid for the tiles and cinders. One drain of 204 yards, was cut from 5 to 7 feet deep. This was cut across an adjoining field to take the water from the drains. The farm is much undulated; of course most of the drains have rather a rapid fall.

PREMIUM 14th.—To the tenant and occupier of *not less than* 40 *acres,* who shall drain the greatest quantity, £3. Awarded to Mr. William Morris, of Knowsley, near Prescot.

Mr. Morris' farm contains 56 acres, and has drained 6 acres. The soil, a good dark loam, resting on a subsoil of clay, gravel and sand. He has laid 280 yards of main drains with stones, 6 inches by 6 inches hollow and covered with stone covers; also 560 yards of side drains with stones in a triangular form, and 15 inches hollow; in both cases covered with hedge-dressings, clippings, and brushwood. Mains, 7 to 8 feet deep, and side ones 5 to 6 feet deep, and from 15 to 21

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yards asunder. Work rather expensive, but well done, and produces very good effects on the land, the subsoil being favourable for draining. Incline of the land very slight, but sufficient to clear the drains. Ditches, water courses, and outfalls open and clear.

SUBSOILING.

PREMIUM 16th.—To the *tenant and occupier* who shall subsoil-plough the greatest quantity, *not less than* 4 *acres*, £5. Awarded to Mr. John Birch, of Orrell, near Liverpool.

Mr. Birch's farm contains 121¾ acres, and he has subsoiled 36½ within the 12 months. The soil is a sandy loam, with a mixed subsoil of foxbench and clay. Was inspected when in operation, and once since. The work was done effectually, at an average of about 14 inches deep. The land previously drained.

His next neighbour, Mr. Richard Mawdesley, subsoiled, the same season, 19½ acres, out of a farm of 82½ acres. He is also a good farmer, and has drained most of his farm.

LAYING DOWN LAND TO GRASS.

PREMIUM 19th.—To the *owner and occupier* who shall lay down the greatest quantity of land, *in proportion to the size of his farm*, in the best manner, and with the best selection of permanent grass seeds, the society's silver medal. Awarded to Michael Hughes, Esq., of Sherdley house, near St. Helens.

Mr. Hughes' farm contains 218 acres, and has laid down to permanent grass upwards of 20 acres. The soil is a strong clay loam, resting on stiff clay. The land laid down has a slight inclination to the North, and is perhaps 100 feet above sea level. Previous to laying down, had been well drained, and made thoroughly clean, by a well managed green

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crop. The seed had been sown on the barley crop following the green crop. Inspected May 26th, 1849: crop very promising for a good one. Varieties of grass numerous, and the supply exceedingly liberal.

The following are the varieties and quantities of seeds sown per acre.

1½ bushel of perennial ryegrass	8 lbs. red clover,
½ " hard fesque,	6 " white ditto,
½ " meadow fesque,	6 " trefoil,
½ " do. foxtail,	6 " ribgrass,
6 lbs. poa trivials,	6 " crested dogstail,
6 " poa pratensis.	

PREMIUM 20th.—To the *tenant and occupier, not principally dependant upon farming,* who lays down the greatest quantity of land, but not less than 12 acres, £4. Awarded to Mr. Gilbert Halsall, Hale bank.

His farm contains 105 acres, and he had sown down 15 acres in spring 1847. The soil is a strong clay loam, with a clay subsoil. It had been previously drained, fallowed, and green-cropped, and the seeds sown on an oat crop after wheat, which succeeded the green crop. Inspected May 26th, 1849. Crop promising for a fair average, but nothing more. Selection of seeds, suitable for this soil, except the *soft meadow grass,* [I disapprove of this anywhere] quantity fair.

The following are the quantities and varieties sown,

6 lbs. red clover,	½ peck of hard fesque,
3 " white,	½ " of soft meadow grass,
1½ " cow grass,	1½ lbs. crested dogstail,
2½ " ribgrass,	2 " poa pratensis,
2 " trefoil,	2 " poa trivials,
1 bushel perennial ryegrass,	1½ " vernal grass,
½ peck of meadow fesque,	

PREMIUM 21st.—To the *tenant and occupier, principally dependant upon farming,* who lays down the greatest

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quantity of land, not less than 12 acres, £4. Awarded to Mr. William Boyes, of Speke, near Liverpool.

Mr. Boyes' farm contains 200 acres; and in 1847, laid down 23½. The soil a good loam, not far from the banks of the Mersey. Land well cleaned, well drained, manured, and well laid down. Seeds sown on a barley crop. Crop of grass in 1849, quite a superior one, both in quantity and quality. Mr. Boyes' management throughout his farm, is very good. He has drained most of it, and remodelled it.

The following are the varieties and quantities of seeds sown.

1 bushel of perennial ryegrass,	2 lbs. ribgrass,
½ " meadow fesque,	4 " red clover,
3 lbs. of poa pratensis,	4 " cowgrass,
3 " of poa trivials,	2 " white clover.
2½ " dogstail,	

MARLING.

PREMIUM 24th.—To the *tenant and occupier of not less than 50 acres,* who shall marl not less than 5 acres, £2. Awarded to Mr. Wm. Morris, of Knowsley, near Prescot.

His farm contains 56 acres: he has covered 5 acres with marl, within the twelve months, with 70 cubic yards per acre. The soil is a light peaty loam, with a sandy subsoil. The land had previously been drained and fallowed in the autumn of 1848. The marl was applied in the winter; and in the spring following, mixed with the soil, by the plough and harrow, previous to planting and sowing the crops of potatoes, turnips, and mangel wurzel.

ERADICATING HEDGES.

PREMIUM 27th.—To the tenant and occupier of a farm, of *not less than* 160 *acres,* who shall, at his own expense, eradicate between June, 1848, and June, 1849, the greatest length of *old fences,* in proportion to the size of his farm,

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£6. Awarded to Mr. James Birch, of Sefton, near Liverpool, tenant to Lord Sefton.

Mr. Birch's farm contains 160 acres. Between June 1st, 1848, and June 1st, 1849, he eradicated 3,080 yards of old fences; laid with tiles on slate soles, in the ditches; filled them up by levelling the cops or banks upon the tiles; and making the whole into cultivated land: he also filled up 3 pits, and has, by these improvements, added a considerable extent to his arable land. The work was well done. New fences were planted in straight lines, where required for a proper shape and size of the fields; these were planted on the surface of the land.

Mr. John Birch, of Orrell, eradicated 760 yards the same season; and in the previous year, 2,949 yards, by which he gained a premium that year. He has quite remodelled his farm.

PREMIUM 28th.—To the tenant and occupier of a farm of not less than 80 acres, who shall eradicate the greatest length, as in premium 27, £4. Awarded to Mr. William Atherton, junr., of Speke, near Liverpool.

Mr. Atherton's farm contains 102 acres, and he has eradicated, within the proper time, 1,252 yards of old fences, and laid pipe tiles in the ditches: he has also filled up 4 pits within the year. The work all well done. In 1846, he eradicated 760 yards, and in 1847, 720 yards. In these two years he also filled up 11 pits. Altogether he has made 3 additional acres of arable land to his farm.

Mr. Edward James Pemberton, of Sankey, near Warrington, eradicated, during the last year, 1,695 yards of old fences, and laid tile drains in the ditches. He has remodelled the greatest part of his farm, containing 125 acres, within the last five years, and also drained the greatest part with cinders and tiles; and otherwise much improved the cultivation of his farm. He has gained several premiums from the Manchester and Liverpool Agricultural Societies, when they were separate societies.

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CLASS II.—ROOT CROPS.

SWEDISH TURNIPS.

PREMIUM 1st.—To Sir Thomas Hesketh, Bart., Rufford hall, near Ormskirk, as *owner and occupier*, for the best crop of swedish turnips, not less than 4 acres, the society's silver medal.

The farm contains 250 acres, and under the management of Mr. Alexander Smith; of which 9 acres were in swedish turnips. The soil and subsoil of this field is bog, having been in cultivation for forty or fifty years. It had, that spring, been taken from a tenant, being much exhausted, and full of weeds from previous bad management. The preceding crop had been beans, sown broadcast. The climate is good, for Lancashire; the land also nearly level, well drained, and about fifty feet above sea level.

The land had been well prepared, drawn into 26-inch ridges, the manure spread in the drills, and covered, by reversing the ridges with a double mould board plough. Skirving's improved purple-top seed was sown, by drill, over the manure, in the middle of May, and covered by a light roller. 15 tons of farm-yard manure, 3 cwt. of bones, and 1 cwt. of sulphuric acid, was applied per acre. The crop was very clean and very equal over the field. The bulbs also near equal in size, very sound and well formed, at an average distance of 12 inches in the drills. The average weight per acre was 34 tons. 1 cwt. 1 qr. 20 lbs.

Weighed and viewed, November 10th, 1848.

The best crop for premium 2nd, grown by *tenant and occupier*, not less than 8 acres, was grown by Mr. William Longton, Rainhill, near Prescot; but, having obtained the prize for the best cultivated farm, it disqualified him for taking the prize. His crop was sown June 6th, on 27-inch drills, and manured with 15 tons of farm-yard, and 1½ cwt.

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of guano. Crop clean, sound and equal. The average weight per acre was 26 tons and upwards.

Weighed and viewed, October 31st, 1848.

PREMIUM 3rd.—To Messrs. John & James Ardern, Penketh Brewery, near Warrington, as *tenant and occupier,* for the best crop of swedish turnips of not less than 4 acres, £4.

Their farm contains 64 acres, of which 4½ acres were in swedish turnips. The soil is a light loam of considerable depth, with a gravelly subsoil, and well drained. The previous crop was clover, and the land in a good state of cultivation. It was prepared for turnips in the usual way and the crop cultivated in ridges 27 inches distant, with the bulbs at 12 inches distance in the drills. Skirving's improved purple top seed was dibbled in, from the 27th, to the 29th of May; and 30 tons of farm-yard manure, and 2 cwt. of guano was applied per acre. The crop was clean and equal, the bulbs sound, of large size, and well shaped. The land is level, and near the banks of the Mersey; and the general management of the farm and stock is good. The average weight per acre was 32 tons, 12 cwt,, 1 qr., 12 lbs.

Weighed and viewed, November 9th, 1848.

MANGEL WURZEL.

PREMIUM 5th.—To the *tenant and occupier,* for the best crop of mangel wurzel, not less than 4 acres, £4.

For this premium, the best crop was grown by Mr. Thos. Atherton, of Speke, near Liverpool; but having had premium 4th, for the best cultivated farm, awarded to him, disqualified him for taking this prize. His farm contains 148 acres, and had 4 acres in mangel wurzel; one half long red, and the other half yellow globe. The seed was sown in drills, on April 24th, and manured with 25 tons of farm-yard manure per acre. The drills were 27 inches apart, and the

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bulbs were 10 inches distant in the drills. It was a fine crop, clean and sound. The average weight per acre, 35 tons. 0 cwt. 3 qrs.

Weighed and viewed, the first week in November, 1848.

PREMIUM 6th.—To Mr. James Birch, of Edge farm, Sefton, near Liverpool, as *tenant and occupier,* for the best crop of mangel wurzel, not less than 2 acres, £3.

His farm contains 160 acres, of which 2 acres were in mangel wurzel. The soil a sand and peaty loam: the land nearly level, and perhaps about fifty feet above the sea. In the previous year, the land had grown a crop of hay, and afterwards a crop of turnips. The cultivation was in drills, 27 inches distant; and manured with 15 tons of farm-yard manure, and 3 cwt. of guano per acre. The land had previously been drained and subsoiled: and the management altogether of a superior order. The crop was clean, healthy, well grown, and of good shape. The average weight per acre was 44 tons, 1 cwt. Many single roots of this crop weighed 30 lbs. each.

Weighed and viewed, November 1st, 1848.

ROYAL NORTH LANCASHIRE AGRICULTURAL SOCIETY'S REPORT, FOR 1849.

Inspectors' report of crops, cultivation, &c., of the *successful competitors,* for the premiums offered by the Royal North Lancashire Agricultural Society, in the year 1849. These reports were read at the annual meeting and exhibition of that society at Lytham, on September 20th, 1849.

Inspectors,—Messrs. WILLIAM ROTHWELL, Winwick, and JOHN WELCH, Cabus, near Garstang.

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CLASS I.

PREMIUM 1.—BEANS, FIRST PRIZE, £5.

For this premium there were four competitors, all having very good crops. The inspectors have awarded it to Mr. Edward Bridge, of Farrington hall. Mr. Bridge's farm contains 150 acres, and he has 8 acres in beans. The soil of this field is a good clay loam, but has not been drained. This operation would, no doubt, benefit it, though it does not require it so much as other lands in the same farm. The land was fallowed after a corn crop in the autumn and spring, one part manured with 4½ cwts. of guano per acre, and the other part with good farm-yard manure. The seed was sown the latter end of March, in ridges 34 inches distant, and kept clean with horse-hoeing and hand weeding. The crop is a superior one, and very clean, and best set with pods where manured with guano, but the tallest beans where farm-yard manure was used. If there be any fault in the management it is in too thick sowing.

PREMIUM 2.—BEANS, SECOND PRIZE, £3.

For this premium there were three competitors. Awarded to Mr. Archibald Scott, of Clifton. Mr. Scott's farm contains 370 acres. The crop entered and inspected extends to 14 acres, and there are 26 acres not entered or inspected. The soil on which this crop is raised, is a deep alluvial soil on the banks of the river Ribble. The land prepared in the autumn and spring, and one part manured in the winter, and the other part in the spring, with farm-yard manure. The seed was sown in ridges, 33 inches apart, in the months of March and April, and the crop horse-hoed during the summer. The crop is a good one, but not particularly clean; it is cleanest where last sown, but best set with pods on the part sown first. The land is drained.

PREMIUM 3.—BEANS, THIRD PRIZE, £3.

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For this premium there were five competitors. Awarded to Mr. James Fair, Old Holly, Cabus. The soil of Mr. Fair's field is a strong loam, and well drained. Land fallowed in the autumn and spring, and manured with farm-yard manure. The seed was sown in March, in 30-inch ridges, and the crop horse-hoed and hand-weeded in the spring and summer. The crop is a fair average one, very clean, and quite ready for cutting; head ridges fallowed and clean. Mr. Fair's farm contains 148 acres, and he has five acres in beans.

PREMIUM 4.—BEANS, FOURTH PRIZE, £2.

For this premium there were four competitors. Awarded to Mr. John Cartmell, Westby, near Lytham. Mr. Cartmell's farm contains 120 acres, of which 11 acres have been sown with beans, the soil being moss, well drained and sanded. It was prepared in the autumn and spring, and the seed sown in 33-inch ridges in March. The crop was clean but not equal, some parts being very light, and the other a fair average crop. Manured with farm-yard manure. Head ridges well fallowed, and very clean.

PREMIUM 5.—SWEDISH TURNIPS, FIRST PRIZE, £5.

For this premium there were seven competitors, and all of them have very good crops. The inspectors have awarded the prize to Mr. Robert Lambert, of Ribby, near Kirkham. Mr. Lambert's farm contains 155 acres, and his swedish turnips extend to 18 acres. The soil where this crop grows, is a good loam, resting on a mixed subsoil of clay and gravel, well drained and fallowed, sown in May, on ridges 27 inches distant from each other, and the plants thinned to 10 inches in the rows; kept quite clean with horse and hand-hoeing during the summer; manured with 1½ cwts. of guano per acre, in addition to from 12 to 14 tons per acre of farm-yard manure. The whole crop will be a heavy one.

PREMIUM 6.—SWEDISH TURNIPS, SECOND PRIZE, £3.

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For this premium there were six competitors. Awarded to Mr. Alexander Begbie, Westby. Mr. Begbie's farm contains 420 acres, and the crop entered for inspection is 20 acres, the soil of which is a good strong loam, well drained and well prepared for the crop; manured with 3 cwts. of guano, and about 14 tons of farm-yard manure per acre, and on a small piece, a little gypsum in addition. Seed sown on ridges, 30 inches apart, and the plants thinned to about 11 inches. After-management good. The crop clean, roots sound and well shaped, and not much (if any) less in weight than the crop awarded to premium 5; but Mr. Begbie having only twenty acres on a farm of 420 acres, and Mr. Lambert having eighteen, on a farm of 155, the inspectors, on this account, had no difficulty in their decision.

PREMIUM 7.—COMMON TURNIPS, £3.

For this premium there were three competitors, all of them having good crops, and clean. The inspectors have awarded the prize to Mr. Alexander Begbie, Westby. The crop entered and inspected was 18 acres; soil and management in every respect similar to his swedes. The crop is clean, healthy, and well grown; sown in May, before the swedes, with the intention of having them consumed early in the autumn, and the land sown with wheat. The whole of Mr. Begbie's farm is well drained, and the fields very much improved in both size and form.

PREMIUM 8.—SWEDISH TURNIPS, £3.

For this premium there were nine competitors, and all of them with very good crops. The inspectors have awarded the prize to Mr. William Sudel, of Salwick. Mr. Sudel's farm is 72 acres, nearly four acres of which are sown with swedes; the soil a dark loam on a mixture of clay and gravelly subsoil. The field is well drained and prepared; manured with 2 cwts. guano, in addition to from 12 to 14 tons of farm-yard manure per acre; sown on ridges 36 inches

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distant, and the roots thinned to 10 inches. The crop is very clean, the roots healthy, well grown, and well formed, and as heavy a crop as any that the inspectors have examined.

PREMIUM 9.—SWEDISH TURNIPS, £2.

For this premium there were eight competitors, and all of them having good crops. The inspectors have awarded this prize to Mr. Henry Fisher, of Westby. Mr. Fisher's farm is 125 acres. Swedish turnips inspected, eight acres, the soil of which is a good brown loam, and well drained; the management in preparing the land and after cultivation, as good as it can be; manured with 3 cwts. of guano, and 2 cwts. of bone manure per acre; the seed sown in May, on ridges 30 inches apart, and the plants thinned to 10 inches; the crop is clean, sound, and well formed, and very nearly equal in weight to the crop of Mr. Sudel's.

PREMIUM 10.—COMMON TURNIPS, £2.

For this premium there were two competitors, and both having a good crop. The inspectors have awarded this prize to Mr. Thomas Carter, of Ellel Grange. Mr. Carter's farm is 85 acres, four acres of which are sown with turnips. The soil on which the turnips grow is a good deep loam, and naturally dry. The land had been well prepared, and the after-cultivation good, with the exception of the turnips being left (in the opinion of the inspectors,) too near each other in the rows. Sown on ridges 30 inches apart, and the plants thinned to eight inches. The crop is clean, healthy, sound, and well formed.

CLASS II.

PREMIUM 11.—LAYING DOWN LAND FOR GRASS, £5.

For this premium there were two competitors. The inspectors have awarded the prize to Mr. William Stavert, of Westby. Mr. Stavert's farm is nearly 400 acres. 80 acres were laid

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down in 1848, one part on wheat after summer fallow, another part on wheat after turnips, and the remainder on barley after turnips. Some parts of the soil are a strong clay loam, resting upon clay; other parts are of a light nature, with a sandy or gravelly subsoil. The whole has been well drained, and otherwise under good management, while in green crop or fallow. The ridges or lands are of proper size and form for mowing or pasturing. The whole has been pastured. The mixture of grasses seems good, but the qualities the inspectors could not ascertain, on account of Mr. Staver's absence from home.

PREMIUM 12.—LAYING DOWN LAND FOR GRASS, £3.

Awarded to Mr. Alexander Begbie, of Westby. Mr. Begbie's farm is 420 acres. The quantity of land laid down in 1848, entered and inspected, is 51 acres; another field was laid down at the same time, but was not entered for inspection. The whole of the 51 acres were sown on a barley crop, after turnips; the land apparently well drained, prepared, and manured for that crop. The grasses are a mixture of white, red, yellow, and marl clover; timothy, rib, and rye grass, and of altogether, a liberal supply. The whole pastured with sheep. The land, on both of these farms, which had previously been a good deal under the plough, did not exhibit the same fine appearance which was perceptible on the other portions.

PREMIUM 13.—LAYING DOWN LAND FOR GRASS, £3.

One entry. Awarded to Mr. Henry Fisher, of Westby. Mr. Fisher's farm is 125 acres. The quantity laid down in 1848 and entered for inspection is six acres, sown down upon a barley crop after turnips, and has been pastured this summer. The soil is a good red loam, and the land has had every justice done to it in fallowing, cleaning, and manuring for the turnips, and in sowing down with grass seeds. Mr. Fisher has sown 10lbs. white clover per acre, besides six or seven

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other sorts of grasses and clovers, and the land has now the appearance of old and rich pasture fields. Mr. Fisher is a very good farmer.

CLASS IV.

PREMIUM 19.—HEDGES, £4.

For this premium there were seven competitors. The inspectors awarded the prize to Mr. George Banks, of High Gate, near Kirby Lonsdale. Mr. Banks' farm contains 158 acres, he having occupied it five years. The fences had been left to grow wild by the previous tenant. Mr. Banks has been at considerable expense in cutting, plashing, and copping, the greatest portion of the fences. 1845 yards, *entirely of thorn*, has been done in a very good and workmanlike manner, so as soon to be capable of forming very good fences, within proper bounds. Mr. Banks has also cut, which are *not entirely of thorns*, to a greater length than what is mentioned above; being a mixture of thorns, hazels, alders, and other plants.

PREMIUM 20.—HEDGES, £2.

For this premium there were six competitors. The inspectors have awarded the prize to Mr. Thomas Forshaw, of Chorley hall. Mr. Forshaw's farm contains 66 acres. He has occupied it but a few years, and the greatest length of the fences had been cut and put in a proper form by the preceding tenant or proprietor. This year there has been 5,978 yards dressed up in a very proper manner. The length executed is certainly extensive for the size of the farm, but the work has not been near so expensive as on Mr. Banks' farm, as the fences and cops of the latter were left in so very rough a state by his predecessor.

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CLASS XII.

PREMIUM 70.—GENERAL STOCK AND FARM MANAGEMENT, £15.

For this premium there were two competitors. The inspectors have awarded the prize to Mr. Robert Winder, Lathwaite, near Cockerham. Mr. Winder's farm consists of 170 acres, a considerable portion of which is low, flat, moss land, which is all drained with turf, at his own expense. The remaining portion of the farm is more elevated, and the soil is a good brown loam. Most of that which required draining has been done with tiles or turf, according to the nature of the subsoil. This year Mr. Winder has the following crops cultivated on his farm, viz:—35 acres of wheat, after the following crops, viz., drilled beans, turnips, potatoes, and summer fallow, all clean and good crops, excepting that portion after the beans, which is not quite so clean as the other; 35 acres of oats off ley and clover root—good crop; 11 acres of beans, in 33-inch drills, after oats, from clover ley—fair crop; 10 acres of barley, after oats off ley—not a heavy crop; 13 acres of turnips and potatoes, drilled and clean—but not a very even crop; 5 acres of rape, broadcast and sown with grass seeds—clean, and seeds good; 15 acres of old meadow, in fair condition, and producing good herbage; 5 acres of clover, after fallow wheat, —very good and clean; and 41 acres of old pasture, orchard, yard, &c.,—good and clean pasture; total 170 acres. Mr. Winder's stock consists of 15 milch cows, three two-year-old heifers, seven yearling ditto, five calves, and one yearling bull, all of the improved short-horned breed. The cows are young, well-bred, and apparently very good milkers. Five working horses, and one brood mare, all useful stock and young. 22 ewes, 26 lambs, and one ram of the pure Leicester breed, one breeding sow, and nine sucking pigs, one breeding sow in-pig, and one store pig, all very superior, making a total of 95 head of live stock. The water-courses and ditches are well opened and clean. Mr. Winder has also made an

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embankment at his own expense, of 344 rods in length, and 2½ feet high, along the side of a brook, to prevent its overflowing the adjoining fields. During the last seven years he has marled or clayed 60 acres, and the other portion of the low lands he has also marled or clayed since he took possession of the farm, which is twenty years ago. He has also planted nearly a thousand rods of thorn fences, which are kept in very good order. During the last year, Mr. Winder has purchased 120 tons of manure, and 35 cwts. of guano. The farm buildings, yard, &c., are in fair order. The roads, fences, and gates are also in good repair.

PREMIUM 71.—GENERAL STOCK AND FARM MANAGEMENT, £8.

For this premium there were four competitors. The inspectors have awarded the prize to Mr. James Robinson, Lanehouse, Ulverston. Mr. Robinson's farm is 82½ acres. The soil, on a small portion of the estate, is a deep rich loam, and very little above the level of the sea; the other portion is higher, and sloping towards the sea—this is a thinner and lighter soil, and rather stony, but healthy cropping land, and naturally dry—rather too much so. This farm is exceedingly well managed in both arable and grass lands. The fences and gates are in very good repair. The corn and green crops are very good, and exceedingly clean. The grass land, both the old and that which is newly laid down, is very clean and free from weeds. Mr. Robinson has this year the following extent and description of crops and grass on his farm, viz:—12 acres of barley, after mangel wurzel, sown with seeds—both barley and seeds are very good; 8½ acres of oats, after two years pasture, the field to be green crop next year; 15 acres of one-year old grass, pastured; 15 acres of two-years old grass, pastured both years; 2½ acres of clover and Italian ryegrass, cut twice for soiling horses, bulls, &c.; 3½ acres of old permanent meadow; 11½ acres of old permanent pasture; and 14½ acres of mangel wurzel—heavy and clean crop; total

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82½ acres. The description and number of Mr. Robinson's stock is as follows, viz:—ten milch cows, one bull, two two-year old heifers, three yearling ditto, and four calves, all of the improved short-horned breed; 22 Leicester ewes, 8 South Down ewes, 2 Leicester rams, 1 South Down ram, and 32 lambs, all pure bred; 1 boar, 1 breeding sow, and 2 store pigs, all very good, and 5 working horses, total live stock 94 head. Mr. Robinson purchases yearly about 5 qrs. of linseed, 5½ tons of rape cake, and 4 qrs. of bean meal. The farm yard and farm buildings are not kept in the best order, which is the only fault the inspectors have to complain of on Mr. Robinson's farm.

PREMIUM 72.—GENERAL STOCK AND FARM MANAGEMENT, £5.

For this premium there were four competitors. The inspectors have awarded the prize to Mr. Benjamin Baxter, Marsden hall, near Burnley. Mr. Baxter's farm is 55 acres, in a very high situation, perhaps 600 feet or more above the level of the sea. The soil is a strong dry loam, not very deep, and rests on a stiff clay subsoil, and has all been drained. The whole farm is in old meadow and pasture, in about equal proportions, and in a high state of cultivation. The fences, gates, roads, &c., are in very good order, so also the farm buildings. These improvements have all been done by the late proprietor, who occupied it until within the last few years, and the fences are still kept in order by the present proprietor, who lives on the estate. The stock is all of the pure short-horned breed. Mr. Baxter breeds his own stock, and is not sparing of expense in purchasing good bulls, when it is requisite for him to make a change. The following is a description and number of Mr. Baxter's cattle, &c., viz:—18 milch cows, 1 two-years old heifer, 3 heifer calves, 3 bull calves, 1 bull, 1 horse, 8 Leicester ewes, 1 ram, same breed; 3 lambs (the others are sold off) all very good. Mr. Baxter has made several conveniences in and about the farm yard, and he keeps all very clean and neat.

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MANCHESTER AND LIVERPOOL AGRICULTURAL SOCIETIES' REPORTS, PREVIOUS TO 1849.

The following is a list of the successful candidates in this County, for the various premiums offered, for cultivation, crops, and general improvements; by the Manchester and Liverpool Agricultural Societies, for a number of years previous to 1849.

—o—

	BEST CULTIVATED FARMS, 10 years.			Extent of Farm.
	MANCHESTER SOCIETY.			ACRES.
1839	Lord Francis Egerton, Worsley hall, ...	... owner and occupier		477
"	John Clare, Esq., Sankey, near Warrington, ...	... ditto	ditto	70
"	Mr. James Dean, Barlow hall, near Manchester, ...	... tenant and occupier		309
1840	Mr. James Kay, Clifton hall, near Manchester, ...	... ditto	ditto	250
"	Mr. Robert Hampson, Crow Trees, Radcliffe, ...	... ditto	ditto	78
1841	Mr. Ralph Unsworth, Winwick, near Warrington, ...	... ditto	ditto	80
1842	John Grant, Esq. Nuttall hall, near Bury, ...	... owner and occupier		301
1843	Joshua Knowles, Esq., Tottington, near Bury, ...	... ditto	ditto	161
"	Mr. George Bannister, Stretford, near Manchester, ...	... tenant and occupier		122
1844	Mr. Edward Whitehead, Blakeley, near Manchester, ...	... ditto	ditto	56
1845	Mr. John Crowther, Blakeley, near Manchester, ...	... ditto	ditto	97

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			ACRES.
1847	Mr. Henry Ingham, Patinthorn, Prestwich, ...	tenant and occupier	150

LIVERPOOL SOCIETY.

1839	Mr. William Atherton, Speke, near Liverpool, ...	tenant	146
"	Mr. James Rose, Woolton, and Hale Gate, ...	ditto	230
1840	R. C. Lowndes, Esq., West Derby, ...	owner	80
"	Mrs. Jane Birch, Sefton, ...	tenant	135
1841	Mrs. Elizabeth Edwards, Speke, ...	ditto	93
1842	Mr. Thomas Langshaw, Speke, ...	ditto	99
1843	Mrs. Ann Postlewaite, Speke, ...	ditto	180
"	Mr. William Ashton, Speke, ...	ditto	90
"	Mr. Peter Robinson, Rainhill,...	ditto	80
1844	Mr. James Langshaw, Speke, ...	ditto	98
1845	Richard Willis, Esq., Halsnead, near Prescot, ...	owner	500
"	Mr. Henry Clayton, Speke, ...	tenant	163
"	Mr. Gilbert Halsall, Halewood, ...	ditto	103
1847	Mr. William Atherton, Speke,...	ditto	163
"	Mr. Thomas Atherton, Speke,...	ditto	146

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MANCHESTER AND LIVERPOOL SOCIETY.

		ACRES.
1848	*John Ireland Blackburne, Esq., Hale hall, ... owner	242
"	Zachariah Sillar, Esq., M.D., Rainford, ... ditto	125
"	Mr. Thomas Edwards, Speke, ... tenant	160
"	Mr. James Birch, Sefton, ... ditto	130
"	Mr. Thomas Langshaw, Speke, ... ditto	99
"	Mr. Hugh Speed, Huyton, ... ditto	132
"	Mr. Gilbert Halsall, Halewood, ... ditto	103

* Mr. Blackburne subsequently declined his prize, on account of his farm not being reported in complete order.

DRAINING. MANCHESTER SOCIETY.

		A.	A.
1843	Mr. Edward J. Pemberton, Sankey, near Warrington, ... tenant, ... farm	125,	drained 11
1844	Mr. Edward J. Pemberton, Sankey, near Warrington, ... " ... "	125,	" 17
"	Mr. James Ratcliffe, Bold, near Warrington, ... " ... "	100,	" 16
"	Mr. Samuel Parsonage, Sankey, near Warrington, ... " .. "	56,	" 5½
1845	Mr. James Ratcliffe, Bold, near Warrington, ... " ... "	100.	" 8
1847	Ditto ditto ditto ... ... tenant, farm	100A.	drained 14A. 9336 YDS.

LIVERPOOL SOCIETY.

		A.	A.	YDS.
1841	Mr. William Boyes, Speke, near Liverpool, ... tenant, ... farm	200,	drained 20½,	10,200
"	Mr. William Kerfoot, Winwick, near Warrington, ... "	150,	" 22½,	12,062

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					A.		A.	YDS.
1841	Mr. Edward Bridge, Huyton, ...	...	tenant,...	farm	47,	drained	9,	6,126
"	Mr. Thomas Sharples, Tarbock, ...	...	" ...	"	41,	"	6,	4,691
1842	Mr. William Boyes, Speke, near Liverpool, ...	...	" ...	"	200,	"	19½,	10,232
"	Mr. William Longton, Rainhill, near Prescot, ...	...	" ...	"	101,	"	19,	10,468
"	Mr. Richard Halsall, Halewood,...	...	" ...	"	96,	"	13,	11,792
"	Mr. John Cartwright, Sankey, near Warrington, ...	...	" ...	"	52,	"	3,	3,734
1843	Mr. Edward J. Pemberton, Sankey, near Warrington, ...	...	" ...	"	125,	"	11,	11,748
"	Zachariah Sillar, Esq.. M. D., Rainford, ...	...	owner, ...	"	150,	"	34,	19,602
"	George Boulton, Esq., Harrock hall, near Ormskirk, ...	...	tenant,...	"	260,	"	27,	16,428
1844	Michael Hughes, Esq., Sherdley house, near St. Helens,	...	owner, ...	"	155,	"	10,	9,417
"	Mr. Edward James Pemberton, Sankey, near Warrington,	...	tenant,...	"	125,	"	17,	17,182
1845	R. C. Lowndes, Esq., West Derby, near Liverpool, ...	...	owner, ...	"	80,	"	10,	6,608
"	Mr. Robert Birch, Netherton, near Liverpool, ...	...	tenant,...	"	208,	"	19,	6,407
"	Mr. James Ratcliffe, Bold, near Warrington, ...	...	" ...	"	100,	"	8,	5,872
"	Mr. Samuel Parsonage, Sankey, near Warrington, ...	...	" ...	"	56,	"	7½,	6,561
1847	Michael Hughes, Esq., Sherdley house, near St. Helens,	...	owner, ...	"	206,	"	48¼,	41,363
"	Mr. James Warburton, Bewsey, near Warrington, ...	...	tenant,...	"	200,	"	25,	32,360
"	Mr. Richard Mawdesley, Orrell, near Liverpool, ...	...	" ...	"	84,	"	15,	7,249
"	Mr. Samuel Parsonage, Sankey, near Warrington, ...	...	" ...	"	56,	"	4,	4,853

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				A.		A.	
1848	Mr. Robert Birch, Netherton, near Liverpool,	...	tenant,...farm	208,	drained	56,	19 miles & 216 yds.
"	Mr. William Atherton, junr., Speke,	ditto, ..	" ... "	102,	"	13,	... 7,790 "
"	Mr. William Henshall, Sutton, near St. Helens,	...	" ... "	81,	"	15½,	... 18,225 "
"	Mr. Samuel Parsonage, Sankey, near Warrington,		" ... "	60,	"	6,	... 5,846 "

SUBSOILING. LIVERPOOL SOCIETY.

1843	Zachariah Sillar, Esq., M. D., Rainford, ...	owner, ...farm	150 acres,	subsoiled	10 acres.
1844	Robert Neilson, Esq., Halewood, ...	tenant,... "	175 "	"	99 "
1845	Mr. Robert Birch, Netherton, near Liverpool, ...	" ... "	208 "	"	42 "

LAYING DOWN LAND TO GRASS. LIVERPOOL SOCIETY.

1841	Mr. William Atherton, Speke, near Liverpool,	...	tenant, ...	farm	146 acres,	laid down	28 acres.
1842	Mr. Henry Clayton, Speke, near Liverpool, ...	...	" ...	"	163 "	"	29½ "
1843	Mr. James Langshaw, ditto ditto,	...	... " ...	"	98 "	"	13 "
1844	Mr. William Atherton, junr., do. ditto,	...	... " ...	"	102 "	"	14 "
1845	Richard Watt, Esq., ditto ditto,	...	... owner, ...	"	121 "	"	17¾ "
"	Mr. James Rose, Halegate, ditto,	...	... tenant, ...	"	232 "	"	16 "
"	Mr. Thomas Atherton, Speke, ditto,	..	... " ...	"	146 "	"	24 "
1847	Richard Watt, Esq., ditto ditto,	...	... owner, ...	"	121 "	"	15½ "
"	Mr. James Langshaw, ditto ditto,	...	... tenant, ...	"	99 "	"	15¼ "

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1848 Mr. George Smythies, Bickerstaffe hall, near Ormskirk,... tenant,...farm 380 acres, laid down 63 acres.
" Mr. William Boyes, Speke, near Liverpool, ... " ... " 200 " " 30½ "

MARLING. LIVERPOOL SOCIETY.

1843 Mr. John Davies, Childwall, near Liverpool, ... tenant,...farm 126 acres, marled 32 acres.
1844 Mr. Robert Birch, Netherton, ditto, ... " ... " 208 " " 27½ "
" Mr. John Davies, Childwall, ditto, ... " ... " 126 " " 34 "
1847 Mr. John Birch, Orrell, ditto, ... " ... " 110 " " 23 "

MANCHESTER AND LIVERPOOL SOCIETY.

1848 Mr. Richard Mawdesley, Orrell, near Liverpool, ... " ... " 80 " " 12½ "

TANKS AND RESERVOIRS FOR LIQUID MANURE. LIVERPOOL SOCIETY.

1842 Robert Neilson, Esq., Halewood, near Liverpool, tenant,
1843 Mr. Peter Littler, Knowsley, ditto do.
1844 Mr. James Birch, Sefton, ditto do.
1845 Charles Whitfield Harvey, Esq. Walton, ditto owner.
" Mr. John Birch, Orrell, ditto tenant,
1847 Mr. Ralph Webster, Melling, ditto do.

MANCHESTER AND LIVERPOOL SOCIETY.

1848 Michael Hughes, Esq., Sherdley house, near St. Helens, owner,
" Mr. Isaac Hesketh, Moss side farm, Worsley, tenant.

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HEDGES. LIVERPOOL SOCIETY.

1843	Mr. John Birch,	Orrell, near Liverpool,	...	...	tenant,...	farm	110	acres,	planting,	1,899 yards.
1845	Mr. Robert Birch,	Netherton,	ditto,	...	...	"	... "	208 "	"	3,188 "
"	Mr. John Birch,	Orrell,	ditto,	...	...	"	... "	110 "	eradicating,	1,054 "
"	Mr. James Rose,	Halegate,	ditto,	...	...	"	... "	232 "	"	1,670 "
1847	Mr. Richard Mawdesley,	Orrell,	ditto,	...	...	"	... "	54 "	planting,	927 "
"	Mr. John Jenkinson,	Speke,	ditto,	...	...	"	... "	190 "	eradicating,	3,280 "
"	Charles Whitfield Harvey, Esq.,	Bickerstaffe,		...	"	... "	130 "	"	3,088 "	

MANCHESTER AND LIVERPOOL SOCIETY.

1848	Mr. John Birch,	Orrell, near Liverpool,	...	...	tenant,...	farm	110	acres,	eradicating	2,949 yards.
"	Mr. Robert Birch,	Netherton,	ditto	...	...	"	... "	208 "	"	4,866 "
"	Mr. Richard Mawdesley,	Orrell,	ditto	...	...	"	... "	80 "	planting,	607 "

CROPS. MANCHESTER SOCIETY.

					acres.	per acre. tons.	cwt.
1840-1	Sir Thomas J. de Trafford,	Trafford Park, near Manchester,	owner,	swedish turnips,	8	28	10
" "	Mr. Thomas Robinson,	Bold old hall, near Warrington,	tenant,	ditto	6	38	0
1842-3	Joshua Knowles, Esq.,	Tettington, near Bury, ...	owner,	ditto	6	33	0

LIVERPOOL SOCIETY.

1840-1	Hugh Jones, Esq.,	Lark hill, near Liverpool, ...	owner,	swedish turnips.	8	39	12
" "	Mr. William Boyes,	Speke, ditto	tenant,	ditto	10	38	1

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					acres.	per acre. tons.	cwt.
1840-1	Mr. Hugh Clare, Sankey, near Warrington,	...	tenant,	swdish turnips,	3	36	3
1841-2	John Ireland Blackburne, Esq., Hale hall,	...	... owner,	ditto	4⅛	40	14
" "	Mr. John Ardern, Penketh, near Warrington,	...	... "	ditto	2¼	37	15
1842-3	Mr. Thomas Robinson, Bold old hall, near Warrington,	...	"	ditto	10	29	2
" "	Mrs. Hugh Jones, Lark hill, near Liverpool,	...	... owner,	ditto	8	30	0
1843-4	Thomas Clifton, Esq., Lytham hall,	...	... ...	" ditto	25	32	4
" "	Mr. John Heyes, Knowsley,	...	... ...	... tenant, ditto	3	27	8
1844-5	John Ireland Blackburne, Esq., Hale hall,	...	... owner,	ditto	4⅛	28	17
" "	Mr. John Gore, Roby, near Liverpool,	...	... ...	tenant, ditto	6¼	28	1
" "	Mr. Samuel Parsonage, Sankey, near Warrington,	...	"	ditto	3	23	2
" "	Robert Neilson, Esq., Halewood, ..	...	... ...	" mangel wurzel,	5	31	10
1845-6	Messrs. John & James Ardern, Penketh, near Warrington,	"	swedish turnips,		3	36	7
1846-7	John Ireland Blackburne, Esq., Hale hall,	...	... owner,	ditto	13	34	4
" "	Messrs. John & James Ardern, Penketh, near Warrington,	tenant,	ditto		4	24	4
	MANCHESTER AND LIVERPOOL SOCIETY.						
1847-8	Mr. Isaac Hesketh, Worsley, near Manchester,	...	... tenant,	swedish turnips,	6	34	2
" "	Messrs. John & James Ardern, Penketh, near Warrington,	"	ditto		3	31	7

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The majority of the premiums for crops, &c., from the Manchester society were awarded into Cheshire, that county being more favourable for raising such productions, in respect to soil, climate, &c., than the locality in Lancashire from which such claims were generally made.

In the year 1845, the Patron of the society, Wilbraham Egerton, Esq., presented a silver medal to Mr. Benjamin Butterworth, of Nadin farm, Spotland, near Rochdale, he being an unsuccessful competitor for a crop of swedish turnips; to mark the estimation in which the meeting held the successful efforts he had made, under the most adverse circumstances, to introduce the culture of that root in the high and ungenial district in which his farm is situated. The situation of the field on which they were grown is about 1,100 feet above the level of the sea, and the crop weighed 18 tons 15 cwt. per acre.

For the year 1849-50, there are twelve claimants for root crops in this county, for an extent of 86¼ acres, the average weight of whose crops is about 32 tons per acre. The premiums have not yet been awarded.

In ascertaining the weight of the root crops, an average perch or two, is chosen from the whole field; or, should the crop vary much, such an extent is taken in two or three parts of the field. These lots are then carefully weighed, having the *roots* and *leaves* cut clear away; and, from this data the whole extent of crop is judged.

SUBSIDIARY REMARKS.

There being several subjects in the report, that require some additional remarks, together with some subjects that are inadvertently omitted; I will endeavour, in this place, to supply such deficiencies to the best of my abilities.

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MOSS LAND.

In the report, I have recommended all cultivated moss land, to lie in pasture several years between each course of cropping; observing also, that I felt assured that sheep would answer well upon it, cattle being too heavy. In going over Mossbury hall farm (see page 34) this spring, on March 24th, I find sheep do well, both for folding on turnips, or pasturing the new sown grass land; also for eating the turnips when carted to them, on grass land. This farm is beginning to look well, and no doubt will continue to do so. The drilled wheat, new sown grasses, and new fences, looked exceedingly well. The wheat wanted rolling.

DRAINED LAND.

Mr. Smith, of Deanston, and others of the new school, recommend that *all land, properly drained*, may, and should be cultivated on the *flat;* that is, *without furrows.* This is correct for all light soils, and where there is a porous subsoil; but if these parties had farmed on the *stiff clays,* and *clay loams* of Lancashire; and had paid a rent for their farms, they would have sung another song. Even griping on such land, cannot be dispensed with, without loss, however well drained. Water lying on any portion of a field for twenty-four hours, will injure the crop on that portion. Notwithstanding, on thoroughly drained strong land, there is no necessity for *narrow ridges,* or *high crowned ones.* From four to six yards wide, and about twelve inches higher in the centre, than the bottom of the furrow, having a regular rotundity, is the form of ridge I should recommend on such land.

ROLLING.

This article has originated in consequence of observing a man, only a few days ago, in the act of doing considerable

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damage to a crop, by the misapplication of the roller. He was operating upon a new sown field of oats and grass seeds; the soil a clay loam, surface dry, but *wet below*, from recent rains. The roller is an exceedingly beneficial implement, if applied at a proper time; and on the contrary a very mischievous one if improperly made use of. Land should be perfectly dry at the time it is used, or all previous pulverization is rendered of no avail.

Forty years ago the roller was seldom made use of, except on meadow land in the spring. Since then, its use has been gradually extending; yet, except by the best farmers, it is seldom at this time employed for rolling wheat in the spring, which is generally more in want of it than any other crop. I suspect the neglect of its services on this crop, has been caused by such crops on undrained fields being often very light, from having received much damage by rolling before the soil, *below the surface*, was in a *proper state*. This spring (1850) I have seen many hundreds of acres, the produce of which would have been considerably augmented, by a judicious application of the roller, except the weather in April and May chance to be very favourable for that crop.

TURNIP SOWING.

At page 66 in the report, on this subject, there is one remark which requires a little more explaining. I recommend sowing in dry weather; and if it has the appearance of remaining dry, after the manure has been covered in, to defer sowing a few days; and then rolling twice, after sowing, if the *weather* and *soil* be very dry. This is contrary to custom, or what is recommended by most turnip growers. The following are my reasons. If the weather be very dry, and the sowing takes place immediately after the dung is covered in, when the soil is moist, the seed will braird; but, from want of a fresh supply of moisture, and the young plants, being then exceedingly tender and succulent, they come to a stand still, and

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die off, or get sickly; even if the fly does not attack them, and either partially or entirely destroys the crop. The fly is observed to appear in a certain number of days after the soil has been stirred by the plough, and if the seed be sown at this time, *both plants and fly make their appearance at once;* of course, if the weather remains dry, the result may be easily anticipated. Now if the soil be allowed to get perfectly dry after the dung is covered in dry weather, and the seeds sown and well rolled in, when in that state, they will remain in the soil *without vegetating, till rain comes,* at which time they will come up, and grow away, like plants in a hot-bed. Another advantage arising from this delay in sowing is, that the fly springs into life when there is nothing green to feed on, consequently *die* from starvation, or *remove* to other feeding ground. Let the cause be what it may, I had never a failure of crop from the fly when I adopted the plan of sowing recommended above. If the land had been prepared, manured, &c., in the dry weather, and there was every appearance of *rain soon,* I should sow the seed before such rain did come.

HAY-MAKING.

In this report, this branch of farm management, has not been introduced; yet it is a very important one, and one much neglected by too many farmers. *Milk cows* are the best stock for proving the quality of hay; and if farmers would try the experiment between *well made hay,* and that much *spoiled,* (both being cut from the same meadow) they would see the importance of paying more attention to it, while in the process of making. The difference is also just as great between hay made from grass *overgrown,* and that cut while *in bloom.* Hay *spoiled* in making, from overgrown grass is worth less, weight for weight, than oat straw well got. The after-grass is also of far greater product when the grass is cut at the time it is in bloom.

The best hay-making farmers are in the south-eastern

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division of the county, where there is a greater demand for milk, and where the weather is very changeable and moist. The best farmers put it through the following process. Suppose the weather fine, all the grass cut before noon, and in the afternoon of the preceding day, is very *well shaked out by hand*, (not with a pitchfork) so that scarcely two straws together, lie in the same direction. That part which was shaked out before 10 o'clock is turned over before dinner, and the remainder immediately after dinner. The whole is turned over again before 4 o'clock. Then before 7 o'clock (before any *dew falls*) the whole is made into foot coils, with the rake and foot. After the dew is off next morning it is well shaked out again, *with the hand*, into plots; the intervals narrow, or wide, according to the weight of the crop. Then turned over before dinner; shaked out again, after dinner; turned over again by 4 o'clock; then made into wind-rows of five or seven turnings each, and put into cocks of about one cwt. each. Next day shaked out and turned before dinner, and after dinner turned over again, being then made into large wind-rows, and carted to barn or stack; or, made into big cocks of five or six cwt. each, to be carted the first opportunity. Care is taken to cock up every night *before the dew falls;* which is of considerable importance in making good hay. Neither should the sun be allowed to burn one part, by its lying *undisturbed* half, or a whole day. By this mode hay is made in one or two days *less time* than by a more careless manner of making. In showery weather, the farmer has to be exceedingly watchful to see that it is always put into cock before rain. In other parts of the county far less care is taken in hay making; but I am quite satisfied, to the loss of the farmer. Very frequently allowing it to lie in the swarth a whole day, and sometimes in showery weather, several days; and the same also when spread out. A saving of wages, seems to be the principal object of the farmer, more than making good hay. *No* importance is attached to its being *wet with dew* in the night, or *scorched* with sun in the day; and very little importance

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to its being wet with rain, when after the process is advanced. What would a housewife think of having her tea watered, and perhaps remaining in a damp, or wet state for a day or two, and then dried before being put into the tea-pot for use. It should be borne in mind that *dew*, when the grass is nearly made into hay, will do the same damage as rain. I have seen hay cut from two adjoining meadows, but belonging to different farmers; the natural qualities of the grass the same in both, *and both cut on the same day;* yet, from management alone, I calculated the difference in value when carted at 50*s.* per acre. In short had I been a purchaser, for the purpose of its being consumed by a milk stock, in full milk; I should have been sorry to have purchased the spoiled lot, at any price. Frequently in hay-making, *time* is every thing. It was so in this instance. The *attentive,* and the *calculating* farmer made, and carted his hay from the meadow in question, in three days; the other was nine or ten days, because showery weather came on, and in the end cost as much per acre for spoiled hay, as the other cost in making a prime article. Many spoil their hay by carting *too soon,* and these are often the very men who make the least labour of it, when in making.

CORN HARVESTING.

This is a subject that also has not been mentioned in the general report. Wheat is principally cut with the sickle and always bound into sheaves, of from three to four feet in circumference at the band. Some farmers lately have cut this crop with the scythe, but I think the practice is not gaining ground. The great fault with most farmers in reaping, is cutting too high, and thus losing about one ton of straw per acre. However, the best farmers are now beginning to see their error in this respect, and reap very low.

Oats and barley, are mostly cut with the scythe in South Lancashire, except the crop be very heavy. In the North with the sickle, but in both cases always bound into sheaves.

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In the lower and less exposed parts of the country, all corn after cutting is set up into *haddocks*, of three sheaves on each side and two hoods. In more exposed parts into riders, of four sheaves on each side and two hoods. Some farmers set their corn in what they call *half thraves* of thirteen sheaves, that is with five on each side and three hoods. This is the best description of stock in my opinion for any situation. In harvesting corn, there is more spoiled by being carted *too soon*, than by being left out too long. If *well set up*, and *well hooded*, it will not soon spoil in the stook.

FOLDING SHEEP.

The practice of consuming turnips on the land with sheep, has seldom been tried in this county. In 1812, Lord Wilton, at Heaton house, was the first instance I am aware of. It was practised there two seasons, but proved a complete failure. Some very good land was ruined, for two seasons, by the damage it received from the puddled state of the soil. There have been various trials since; but, except where the soil was of a very *light* description, I have never known it answer: we have too much rain falls. For an *early crop* in the *autumn*, or a *late crop* in the *spring*, and the weather favourable, the practice may be profitable. On well drained bog soil, I have no doubt of this. Mr. James Wilson, of Newton parks, has tried it there, on a rather strong loam; but, I understand will do so no more on the same description of soil.

IMPROVEMENTS.

Amongst the numerous properties that have undergone important permanent improvements since the date of last report (1814); there is one, which I have by some means entirely overlooked in my general record of such events; and one which I have been in the habit of seeing, not only the

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improvements going forward, but the mode of farming, almost year by year, that I feel anxious to make record of it here. This is the property of Messrs. William Grant, & Brothers, at Nuttal, Ramsbottom, and Spring-side, near Bury. These improvements commenced near forty years ago, and no estate in the county is at this time, in more exact and complete order. New roads, both public and private, including foot-paths, have been made, so that all parts of the property, or farms, can be approached most conveniently. Substantial farm-houses, commodious outbuildings and farm steadings have been erected. Every part of the land has been drained; and all those parts, which constitute the deepest and the richest soil, lying on the banks of the Irwell, is converted into rich permanent meadow. Other portions of the estate, where the surface lies at a considerable angle, or is very irregular, and too much undulated for arable cultivation, has been improved and laid down to permanent pasture. Those portions which are still more rugged, and narrow crooked dales, have been planted with forest trees. This has also been done in other places for shelter and ornament. Where the land is suitable for arable cultivation, it is mostly under the convertable system, and modern rotations. Fields of proper form and shape, with the fences straight; the latter are excellent over the whole property, all of white thorn, and of modern construction; being kept also in complete and exact order. The largest, and most commodious shippon in Lancashire is on Nuttal hall farm, the residence of John Grant, Esq., and the barn, stables and other outbuildings, are equally substantial and commodious. The shippon is constructed for the accommodation of sixty cows. At Nuttal, there is a large manufacturing establishment, and at Ramsbottom an extensive printing and bleach works. The machinery at both places is turned partly by water power, which is considerable. These works and all around them are always clean and neat. The cottages, dwelling-houses, shops, &c., surrounding these works, and in the village of Ramsbottom, are in excellent order, and

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sufficiently commodious and convenient.

They have built a handsome and commodious church, at their own expense, on an eminence in the centre of the valley; from which there are pleasing and romantic views, up and down the valley, and of the surrounding hill sides.

The following, which is abridged from the "*Preston Guardian,*" forcibly shews that the Lancashire landed proprietors, are now alive to the improvement of their estates.

Among the gentlemen to whom we now refer, we have pleasure in prominently naming Sir Thomas Hesketh, Bart., of Rufford hall, whose accession to the extensive estates of the ancient family of Hesketh, assisted by the enterprising skill of his esteemed agent, Mr. Boosie, has succeeded in draining a portion of Martin-Mere, a large tract of level low-lying land, extending from the Ribble, at Crossens, into Rufford. The whole extent is about 5,120 acres; and the portion to which Mr. Boosie's efforts have been directed is at the eastern end of the Mere, within Rufford and Tarleton, being about 1,200 acres in extent, of which 800 acres will be reclaimed or benefitted by the new drainage.

The plan of drainage proposed by Mr. Boosie has been as follows: In the first instance, two catch-water drains (about three and two miles in length respectively) have been formed, to bring the surface-water from the higher grounds to a sluice, which discharges itself into the river Ribble at Crossens. From the lower lands, however, in the interior of the Mere, the water could not be drained by this process (the level being quite as low as the outlet to the river); therefore recourse has been had to mechanical means, which we shall explain. Two principal and several collateral drains have been constructed to bring the water to one terminus or reservior at the south side of the Mere, the water having in its course a fall to the reservoir of about six feet. At this terminus or reservoir an engine of twenty horse power has been erected to lift up the water into the sluice already mentioned as the recipient of the catch-water drains, and which discharges itself into the river at Crossens. The process of lifting the water is as follows:—To the engine is attached an immense water-wheel, thirty feet diameter, with forty scoops or buckets around the circumference. These buckets, when the wheel is revolving at its ordinary speed, lift up and discharge into the sluice forty-five tons of water per minute, or upwards of seven million and a-half gallons of water in twelve hours! The water thus discharged into the sluice has a course of four miles to run into the cylinders at Crossens, through which it passes into the river. It is calculated that the total quantity of waste water lodged in the whole of the Mere annually, is no less than twenty-five thousand millions of gallons, of which

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the portion of land belonging to Sir Thomas Hesketh will receive about two hundred and fifty million gallons annually, and all this will have to be pumped away by the machinery we have described. To prevent the water, after being raised into the sluice, rising and again overflowing the land, an embankment of four feet and a half in height, and upwards of three miles long, has been raised along the margin of the sluice.

Of the 800 acres of land which will now be brought into cultivation by the drainage being effected, a large proportion has hitherto produced only a scanty herbage of the poorest grasses. It will in future be fitted for all sorts of crops, some of it being very fertile soil, particularly adapted for growing potatoes and other vegetables, for which Rufford and the vicinity have long been famous, and it is almost needless to say that the cultivation of so large a tract of hitherto lost and useless land, will considerably increase the employment of the labouring classes in that neighbourhood. The salubrity of the district must also be improved by the removal of so large a body of stagnant water, exhalations from which are too often a subtle source of endemic disease.

Tuesday last (the 9th of April, 1850,) was fixed upon for the first public working of the new draining apparatus. Accordingly in the forenoon of that day, a considerable concourse of spectators, including the tenantry and labourers for miles round, and a number of visitors interested in agricultural improvements from Preston, Ormskirk, &c. assembled to witness the experiments. About ten o'clock, the engine, with its immense water wheel, was set in motion, and continued during the day lifting the water out of the race in which it was brought from the Mere, into the sluice which conveyed it to the river. The process went on most satisfactorily, and the gradual subsidence of the water in the drain leading to the engine soon showed how effectively it was performing its task.

By Thursday, the water in the catch ditches within the banks was reduced four feet below the surface of the land; and with the apparatus frequently at work, it is not expected to be any higher in future."

There is one district, to the south-west of Manchester, the improvements and general cultivation of which, has not I think, been sufficiently noticed. The district to which I refer comprises the townships of Stretford, Flixton, and Urmston, adjoining to the county of Chester. Some years ago a new cut, or "overflow river," was made through the townships of Stretford and Urmston; for the purpose of relieving the Mersey in time of high floods, and has been of very great benefit to the occupiers of land thus adjoining to the river. This was made at the joint expense of the Trustees of the

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late Duke of Bridgewater, Sir Thomas Joseph de Trafford, and Wilbraham Egerton, Esq.; they being the principal land-owners in the neighbourhood. The expense would be considerable, as it is twenty yards wide at least at the bottom, and the sides well sloped, so as to be convenient to mow and pasture. The embankments on each side are from 4 to 8 feet high above the surface of the meadow, according to the undulation of the land. It commences above the village of Stretford, where there is a very substantial weir or overflow, so that no water runs down the *new river*, until the water in the Mersey, rises to the height of the overflow; and thus in dry seasons, there is considerable produce of hay or pasture from the site of the new river. It enters the Mersey again in Urmston. The whole length 3¼ miles.

Sir T. J. de Trafford, in conjunction with the Trustees of Stretford Turnpike road, and others, have just completed a main sewer through the village of Stretford, which is an excellent improvement to the whole neighbourhood. The cost was about £1,500.

The cultivation of the land in the three townships above named, is generally very good: some of it excellent. Immense quantities of dung is brought from Manchester into this district, and applied in the cultivation of potatoes, turnips, grain and grasses: also celery, rhubarb, brocilo, cabbage and every other vegetable of garden culture. Mr. Geo. Bannister's, of Edge farm in Stretford, is one of the best cultivated farms in the district. He is a regular persevering good farmer; one of the "first class," and gets abundant crops.

This district is generally called the garden of Lancashire; and for the raising of garden vegetables and fruit, in the open fields, no other district within the county is equal to it.

LABOURERS.

In the article on Farm Labourers, page 125, I may be a little misunderstood, as I omitted some points of importance.

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The style of living detailed at page 128 has reference to those who find their own provisions; and these, at *hay* and *corn harvest*, have bread and cheese, with more or less beer, both forenoon and afternoon, provided by the master. At other seasons these often work task-work, which is now more practised than formerly.

Those who board with the farmer, live in a better style. Generally, either thick oat meal or milk porridge, with bread and cheese or butter to breakfast. Bread and cheese and milk, whey, or small beer, in the forenoon and afternoon. Always bacon or other fleshmeat at dinner, and sometimes pudding. At supper, in some districts, same as at breakfast, in others potatoes and bacon.

Wages are I believe higher than in any other county in England, except in some parts of Yorkshire. In-door labourers, that is, servants boarded in the house; from 4*s.* to 7*s.* per week. Those who find their own provisions, from 10*s.* to 15*s.* per week: women 8*d.* to 1*s.* per day: servants in the house 1*s.* 6*d.* to 3*s.* 6*d.* per week: dairy maids considerably more. The highest wages to farm labourers are in the manufacturing districts. Were it not for the Irish, the farmers could not get their work done in the busy seasons, as the manufacturing population cannot leave their employment on account of the machinery, which would have to stop. Forty years ago they could leave their looms, spinning jennies, &c., at any season for a few weeks. The best labourers' cottages in the county, are in West Derby and Salford Hundreds. The highest wages in the latter.

I have said the morals of this class do not stand so high now as forty years ago, and have given my opinion as to the *cause*. With respect to the fact of deterioration of morals, I find many others of the same opinion; as to the *cause* there are various opinions. Some say the beer-houses, and I admit that these are a curse to the country, and always have been; and of course, no doubt, will be *one cause*, and a prominent one too. But notwithstanding this, I can see a

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falling off in the old friendly feelings between masters, mistresses, and servants, caused by a greater distance between the parties than formerly was the case; this being principally in the higher class of farmers. Generally in proportion as a man's mind is elevated, he takes a greater disrelish for the society of those beneath him, or those who are in servitude; and often thinks himself of a superior order of beings. Also the more refined society is, the greater are its *wants*, inducing an evil tendency between masters and mistresses. However, I will say this, that this evil is not so far advanced, as in most other counties in England. I also find from an article in a late number of the *Dumfries Courier*, that the same complaints are prevalent in Scotland; and that the Editor attributes it to the same causes I have named. I have often been in Scotland since 1821, and I perfectly agree with him, and I have frequently made some such remarks. I shall conclude this article by quoting the Editor's words; first premising that, in Lancashire, we are not yet arrived at their most disgraceful and debasing "*bothie*" system. It has been often remarked, by both English and Scotch, that the Packmen or travelling retail dealers, who come here, and who are generally drafted from the labouring population, are altogether a different class of men from those who came 40 or 50 years ago, both in their morals, integrity and industry; and consequently, few now do so well.

"A great change has taken place in the social relations of masters and servants in this county; and it is one which cannot be regarded without alarm. It is probably much more extensive in the rural districts than in the towns, and has, we believe, exercised a very injurious influence upon the population. The kindly relations which existed between the farmers of the old school and their servants have to a great extent disappeared; in some parts of the country the unmarried men, in place of living in the farm-house, as they ought to do, have been forced to herd together in bothies, a system which has been productive of an immense amount of evil. Even where this deleterious system has not been introduced, the kirns and other festive meetings, at which all classes in the parish met together in social converse, have been to a great extent abandoned, owing to, and showing strongly, the change in the manners and feelings of the upper

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classes of agriculturists. The result has been increased refinement, no doubt, in the masters and mistresses, a refinement not seldom *unsound and misplaced;* with a decided deterioration in the character of the servants. Complaints as to this are very rife; but those who make them have, to a great extent, themselves to blame. We heard an experienced agriculturist say, lately, that it was a rare thing now to have an honest farm servant; we believe this to have been an exaggerated statement; but the increased distance betwixt master and man must have been followed by want of confidence on both sides; and where confidence is shut out, dishonesty is pretty sure to creep in.

HIGH FARMING.

Much having been written within the last twelve months, upon the means by which the British Agriculturist may so far effect such radical reforms in the system of his cultivation as to place him in a successful competition with the whole world; I will, as a general conclusion to my now widely extended report, place my ideas upon the subject before the public; and in some measure point out the way by which the system can most successfully be carried out, with its results.

The subject, apparently, was first most strongly brought to notice, by Mr. Cairds' pamphlet on high farming. What is said to have been accomplished at Auchness, has been done and much more, both in this and other counties; besides this farm has advantages, which perhaps not one in fifty is in possession of. A portion of moss land upon a farm is exceedingly valuable, it thus makes the whole farm *more valuable* than if there were *no moss,* or if the *whole was* moss. Then again it possesses the advantage of a plentiful supply of sea weed, as a resource for manure. With respect to the arrangement of the farm buildings, I do not approve of, neither do I like the mode of ventilation. There are some excellent remarks contained in the pamphlet, upon which all ought to reflect, who are desirous of making a change in the agriculture of this country.

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PRINCIPLES OF CROPPING.—The principles of cultivation carried out on the farm at Auchness is in a "greater reliance on *green crops, grass,* and *forage,* as contradistinguished from *corn,* but by no means exclusive of corn." It must be forcibly borne in mind, that in fixing upon any course upon which the successful cultivation of any farm is to be based, the farmer should be ruled by circumstances; the soil, the climate, and the market.

Should the prices of grain during a series of years rule so low, that an arable cultivator could not successfully compete, with a dependance based upon the growth of corn alone, he would, by a greater reliance upon green crops, grass, &c. not only realize a greater profit from those articles in the way of beef, mutton, milk, butter, cheese, &c.; but by increasing his rescourses for manure from the fact of having a greater number of live stock upon his premises, be enabled to compete with the grain market likewise, upon a lower scale of prices.

It is of considerable importance that a proper rotation of crops should be adopted upon all arable farms; as without some regular system, land cannot be cultivated to the best advantage at the same expense. So far as my experience has led me to judge, I should always recommend a portion of every farm to lie in permanent grass, particularly on strong soils, but always kept free from weeds, and in as productive a state as possible. It is really surprising to see how this branch of husbandry is neglected by most farmers. Whatever crop is in most demand in the neighbourhood, or most suitable for the soil and climate, may be cultivated twice in each course of crops or rotation. Bog soil is well suited for *root crops and grasses;* of course these might be cultivated, and *corn entirely excluded.* For instance *winter potatoes* might be taken after grass. The year following the different varieties of turnips, cabbage, and carrots. Early cabbage planted in the autumn, after the winter potatoes were removed, would be ready for cutting, either for cattle or for sale, early the summer following, and yellow turnips follow them: third

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year plant *early potatoes*, to be removed by the first of September, and then sow the land with grass seeds and clover, to stand two or three years. The rotation would stand thus: first, late potatoes; second, turnips, &c.; third, early potatoes; fourth, fifth, and sixth, grass, to be cut or pastured.

Joshua Knowles, Esq., of Tottington, is an example of high farming, without much corn being grown; and the small farm in Orrell is another; for what can be done on a small scale can be accomplished on a larger.

On the other hand, if land be *peculiarly suitable*, for either wheat, barley, oats, beans, &c.; why should not any of *those crops*, be often cultivated on that land *most suitable* for each? There can be *no gain* in cultivating wheat on land *unsuitable* for it; and, there may be *great gain* in growing it *frequently* on land which is *suitable*. The same remarks may be applied to other descriptions of crops. It is not bad husbandry in cultivating one corn crop after another; it consists of *bad preparation of the soil, too light, or no manuring, bad seed, untimely sowing, neglect of cleaning, and draining the land, and a want of care at harvest, &c.* These are the points, the neglect of which causes so many blemishes in the agriculture not only of this county, but in every county both in Great Britain and Ireland. It is quite time that old standard rules, for cropping, should be exploded; and to allow common sense to be the guide of the agriculturist. Most agreements appear to be made for the express purpose, of doing neither landlord nor tenant any service. A landlord *must see* that his property is *not deteriorated;* but, deterioration may, and often does, take place, under the *very best and most fashionable rotations;* when such are not carried out, in a proper manner, and with proper spirit; to do which, requires *energy, capital,* and *sound judgment.* Where any, or all, of these are wanting, it is of no use talking of rotations. *Capital* without *the other requisites, will soon be wasted;* but, *these* with a little capital will often work surprisingly. A tenant should have free scope

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for his abilities; and this may be granted, with the interest of the owner of the soil being likewise properly secured. This is the only way to insure a fair rent for the land; as it is unreasonable to suppose that, a *good tenant* will give as much rent, when he is bound down to certain rules in farming, as when he has free scope in cultivating his farm, for turning it to the best advantage according to the local circumstances of soil, climate and markets.

We are told by those who are great advocates for alternate green and white crops, and who go so far as to say, that any other mode of cropping is ruinous to land, that we should study Chymistry; and yet Chymists say that we may continue to raise corn crops successively without intervening green ones on the same land, provided the farmer applies manure specially adapted for the crops cultivated. Now I do not go so far as this, I merely contend for the principle, that it will not infringe on the rules of good husbandry to take any kind of crops in succession, from the same land, provided the soil and climate are suitable. The best rules, I repeat, are, to drain well where requires it, keep the land perfectly clean, manure sufficiently, but not more than is sufficient, sow or plant at a proper time, both as to weather and the state of the soil, and use every care both as to the time of cutting and securing the crop. When a corn crop is to succeed a corn crop, the *preparation* for the *succeeding* one should commence *immediately* after the removal of the *preceding one*. In fact, this ought to be the rule in any case.

MANURE; MODE OF INCREASING THE SUPPLY.—For high and profitable cultivation of the land, collecting and preserving, every thing about a farm which will enrich the soil, and in applying any fertilizer to it, are points of the greatest importance, and are points which are much neglected by many, who are in other respects good farmers. Frequently farmers will send their teams to some town at a distance for purchased manure, and at the same time neglect

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their dung-hill at home; allowing the urine and other liquid manure to run to waste. This however, I am happy to say is less common than it was thirty or forty years ago; still, I often see farmers sending straw to market, when the price will do little more than pay the expense of the team, tolls and wages. If they are asked why they do not convert it into manure athome, their answer is, that they have more than they can consume or convert into such. In the purely agricultural counties, where straw cannot be sold at any price, the farmers in such cases, allow the cattle to run through it in the yards; when by eating a portion, trampling the remainder, and with assistance of rain water, convert it into manure of but little value; little better, when decomposed, than bogsoil. In such cases, I recommend the following plan, which I always adopted. If I had more straw than I could consume as fodder and litter, and the price was below 3½*d.* per stone, I covered the dung-hill with it, to the depth of a foot or eighteen inches, and gave it a good *soaking with urine,* which I had collected for the purpose, and then *covered* the whole six inches deep with horse and cow dung. This was repeated at intervals, as urine for *saturating,* and dung for *covering* was collected. I found this made capital manure, if the horses and cattle were well kept; and if they are *not well kept,* the *pure dung* makes but indifferent manure. If straw be saturated with *pure urine,* it should be covered immediately with something to prevent it evaporating in dry weather; or washed in wet weather, before fermentation takes place. If straw be saturated with *rain water* first, it will never make good manure afterwards; because it cannot then absorb any enriching fluid. When straw was cheap, I purchased considerable quantities to convert into manure by the above process; and I found the system to answer well. I never found much profit, in allowing much straw to be consumed by cattle as fodder, unless very great quantities of turnips were given along with it. All fertilizing liquids, which can be collected about a farm, should be absorbed by some solid substance, and then applied to the land; or, such application to be made in a liquid state.

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ARTIFICIAL MANURES.—With respect to artificial manures, what I have said in the report at page 89, being but brief, may have the appearance of considering them of little value, which is far from my real intention. My desire was to guard farmers against everything that was said in their favour by men who had no practical knowledge of them, except as chemists, or having pretensions as such. Most of them are exceedingly useful, if judiciously applied; but *none of them* can *permanently* take the place of vegetable manures, without deteriorating the staple of the soil. If in manuring land season after season, only a few *cwts. are applied* to it, and *tons of crop taken from it*, weakness will succeed in the end; but, if by applying artificial stimulants a good crop can be raised, and that produce consumed on the farm, it then forms the first link in the chain by which future abundant supplies of nourishing and enriching manures can be obtained, and the land and the farmer becomes benifitted by the application. A considerable number of these manures have been tried by the farmers within the last ten years; but the only one much thought of at present, is guano; which, can scarcely be called artificial. As a purchased fertilizer, bone manure is my favourite, but this does not come under the term artificial.

PRODUCE.—In the report, I have not mentioned any particulars with respect to the produce of the various crops of grain, roots, clover and meadow hay, the amount of such crops varying so much in the different districts, and under different management, that to give a minute and correct statement would be impossible. I have introduced at page 150 a tabular statement, shewing the difference in the amount of disposable produce, between high and low cultivation; and as a further illustration of that disparity, I will endeavour to shew in what proportion, such productions bear in the gross amount in respect to a high and low rate of farming. From my own experience, in valuing the tithes of this parish for

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seven years; and, from observation, I feel convinced, that the same remarks will apply to every part of the county, that, taking the average produce of the grain crops from the *worst managed bad land*, and comparing it with that, from the *best managed good land*, the proportion is about as one to four; and, that the difference between the produce of the *worst* managed, and the *best* managed land, of *exactly similar qualities*, will be in the proportion of about two to five. That is, that the *good farmer* gets more than *double the produce* of the *bad one*, from the *same quality* of land. The proportion will be about the same, in these cases with the produce of the root crops, and on the grass land whether mown or pastured.

The following scale may be considered as the general rate of produce in this county, comparing the average produce of the county, per acre, with that of the *best cultivated farms*; the variations of the latter being according to the quality of soil and the seasons.

	Average of the County.		*Best Cultivated Farms.*	
Wheat ...	24 bushels,	... from	36 to 48	bush.
Barley, ...	36 "	... "	55 " 65	"
Oats, ...	40 "	... "	70 " 80	"
Beans, ...	30 "	... "	40 " 50	"
*Potatoes, ...	6 tons,	... "	10 " 12	tons.
Turnips, ...	18 "	... "	26 " 36	"
Clover, two cuttings,	2½ "	... "	3½ " 4	"
Meadow hay, one ditto	1½ "	... "	2 " 3	"

The produce of cheese from a *well-fed* dairy stock, properly taken care of in other respects, will be double that from a stock, under indifferent management and ill fed. This is supposing the dairy-maids to be equal in their management; but, the *value of the produce*, would be still less in proportion, when a bad dairy-maid is coupled with a badly fed, ill managed stock. The cheese made in the neighbourhood of Leigh, has been considered the best in the county; but I

* From crop 1841, one farmer sold 4,500 loads, of 252lbs. each, from 36 acres, which is better than 14 tons per acre.

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consider the best dairies in North Lancashire are quite equal, if not superior, to the best "Leigh cheese." The highest produce I am aware of, for a whole dairy, is four cwt. per cow in the season. The general average will be about three cwt. per cow. The highest produce for *one month*, (the first month at grass in the spring) was from a dairy of six cows; thirty days produce of which was 720lb. The *value* varies more inproportion *from a cow*, supposing full milk cheese is made.

STOCK.—As nearly as can be ascertained, the number of cattle and horses kept, by the average mode of farming in this county, will be about thirty to every one hundred acres of land, excluding corn lands, and that occupied by other produce sold off the premises. Upon the best cultivated farms this number will be more than doubled. Joshua Knowles, Esq. upon one hundred acres has kept seventy head; the whole produce being consumed on the premises. The same number will be the average, or near it, of other first class farms, when the amount of produce sold is taken into account. Upon the small farm at Orrell, five cows have been kept upon seven acres, besides £15. worth of produce having been sold, and the family supplied with vegetables.

EXPENDITURE.—The difference in the amount of expenditure between one system of farming and another, together with the variation of soil under cultivation; is such, that it is almost an impossibility to arrive at any correct conclusion in this respect. With regard to rent, rates, taxes, tithes, seeds, &c. this will be the same upon similar land in a similar situation, in whatever way it may be cultivated. The great difference is in the amount of horse and manual labour, and in the application of manure. The expenses first named will be about £3. per statute acre; the soil being a fair average with respect to quality and situation. According to the average rate of farming in this county, for a farm under similar circumstances, with one half of the land in

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corn and green crop, and the other half in grass, the horse labour may be said to be about £1. per acre, including wear and tare; and the manual labour about one man to 15 acres, or £2. per acre. Upon the best cultivated farms the horse labour will amount to £1. 10*s.*, and the manual about £4. where considerable quantities of potatoes are grown. With respect to the application of manure, under the same circumstances as above, under the average rate of farming, it will be about 3 tons per acre; and under the systems adopted upon the best cultivated farms from 6 to 10 tons per acre.

RESULTS.—Numerous examples and details of superior farm management have been given in this report, such as have seldom been exceeded in any part of the kingdom; and with respect to the results from such management, I have not the least hesitation in saying, that generally they have been satisfactory; and in many cases, abundantly remunerative. With respect to facts and figures in this respect, I have not made much labour in inquiring; principally through a feeling of reluctance in so doing. However I am in possession of an authentic statement of the proceeds of three farms within six miles of Manchester, the management of which is decidedly in the first class I am acquainted with; and which I am induced to lay before the public, as an illustration, of what can really be produced through the means of capital, skill and enterprise.

One farm contains 156½ acres, statute measure, another 165 acres, and the other 122 acres. The management of each farm is similar in respect to conducting every operation on the best principle, and of making the most of the land in the the respective crops; the only difference being that each farm varies in the proportionate extent of one description of crop to another. In fact, it has never yet been decided which is the best farmer.

The amount of produce is about similar from each farm, so that in each case I shall state the same amount; that

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amount being, a fair average of the three farms, rather under than over stated. The prices are what may be considered average ones, although a considerable higher rate has been received from these individual farms, with the same amount of crops.

No. 1. 1842. 12 Work horses. Rent, £400.

	acres.		per acre.				s.	d.	£.	s.
Wheat, ...	46½	at	42	bushels	= 1953	bushels at	6	0 =	585	18
Oats, ...	6½	at	72	"	= 468	" at	2	6 =	58	10
Barley, ...	3	at	60	"	= 180	" at	3	9 =	33	15
Potatoes, ...	36	at	12	tons	= 432	tons at	50	0 =	1080	0
Turnips after ¼ of potatoes		at	12	"	= 108	" at	20	0 =	108	0
Swedish turnips, &c.....	4½	at	30	"	= 135	" ...		=	135	0
Vetches (cut green)	1	at	8	"	= 8	" ...		=	8	0
Turnips after vetches, ...		at	12	"	= 12	" ...		=	12	0
Clover and grasses, ...	38	at	4	"	= 152	" at	80	0 =	608	0
Meadow, ...	12½	at	2½	"	= 31½	" ...		=	125	0
After grass, ...	.....		.....	.....	.....	at £3. per acre		=	37	10
Pasture, ...	8½	{ capable of summering one milk cow per acre, gross produce per cow £10. }						=	85	0
	156½								£2876	13

The stock kept upon this farm was 14 horses, 7 colts, 7 cows, 2 stirks, and 6 pigs, total 36 head, which made 156 tons of dung. 2000 tons of dung was purchased, and 6 tons of lime.

No. 2. 1844. 8 Work horses. Rent, £370.

	acre.		per acre.				s.	d.	£.	s.
Wheat, ...	36	at	42	bushels	= 1512	bushels at	6	0 =	453	12
Oats, ...	12	at	72	"	= 864	" at	2	6 =	108	0
Potatoes, ...	30	at	12	tons	= 360	tons at	50	0 =	900	0
Turnips after ¼ of potatoes		at	12	"	= 90	" at	20	0 =	90	0
Turnips, ...	4	at	30	"	= 120	" ...		...	120	0
Vetches, (green)	2	at	8	"	= 16	" ...		...	16	0
Turnips after vetches		at	12	"	= 24	" ...		...	24	0
Clover, ...	25	at	4	"	= 100	" at	80	0 =	400	0
Meadow, ...	30	at	2½	"	— 75	" ...		...	300	0
After grass, ...	.....		.....	.....	.....	..... £3. per acre,			90	0
Pasture, ...	24	{ capable of summering one milk cow per acre, gross produce £10. per cow, }						—	240	0
Orchard, &c.....	2	.....	.....	.....	.....	.....	.....	.....	10	0
	165								£2751	12

The stock kept was 8 horses, 30 milk cows, 6 heifers, &c. 1 bull, 2 pigs and 2 colts, total 49 head. 1360 tons of dung was purchased at a cost of £391.

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No. 3. 1843. 6 Work horses. Rent more than £3. per acre.

	acres.		per acre.				s.	d.	£.	s.
Wheat, ...	17	at	42	bushels	= 714	bushels	at 6	0	... 214	4
Oats, ...	6	at	72	"	— 432	"	at 2	6	... 54	0
Potatoes	22	at	12	tons	— 242	tons	at50	0	... 605	0
Turnips after ½ of potatoes,		at	12	"	— 66	"	at20	0	... 66	0
Clover, ...	17	at	4	"	— 68	"	at80	0	... 272	0
Meadow, 10 acres irrigated,	56	at	2½	"	— 140	"	at80	0	... 560	0
After grass, ...	.....		.....		.....		£3. per acre		168	0
Pasture,...	4	capable of summering one milk cow per acre. Gross produce £10. per cow							... 40	0
	122								£1979	4

The stock kept was about 30 head, and 700 tons of dung was purchased.

The amount spent in labour upon farm No. 2, was about £4. 10*s.* per acre: being the average of the three with respect to the proportionate extent of cropping. That of No. 1 was considerably more, and that of No. 3 less.

It will be seen by these statements, that the gross produce is infinitely more, than what is said to have been realized at Auchness; at which the following is the rate stated. Wheat 36 bushels per acre, oats 45 bushels, potatoes 6 tons, and turnips and grass short of the value of £10. per acre. The amount of rent paid upon these farms under review, is more than double to that paid at Auchness; and the amount expended in labour, is actually three times the amount according to the breadth of land. These circumstances place these farms upon a far higher sphere as examples of superior cultivation, than the one at Auchness; although each may perhaps realize the same proportionate remuneration for the amount of money expended. The expenditure in cultivating these farms would be considerably more than the gross produce of the one at Auchness.

SCOTCH *versus* NATIVE FARMING.—It has been a practice, in this county, for the last forty years, for noblemen and gentlemen, who wished to improve the farming on their estates, to employ strangers, from what are called the best

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farming districts, as agents or bailiffs. Generally they have been Scotchmen. In some instances the result has been good. When this has been the case the men have come from the *western counties* of the North, where both soil and climate were much like ours. More often these attempts have been a failure. I have never yet seen a Scotchman, in Lancashire, beat our *best Lancashire farmers* for making profit, paying high rents, and keeping their farms in order. In short, I have seen few Scotchmen, who have been able to stand their ground when farming on their own capital. This has arisen from most of them, being young inexperienced men, completely ignorant of the nature of our soil and climate, and came with a notion that we Lancashire men, *in agriculture*, were as ignorant as boors, and of course, that it was impossible to learn anything from us. However, as I have said, in some instances after all, they have been of great service to us. It was a Scotchman, who thirty seven years ago, first led me to dive into the secrets of cultivating the soil; and I know a considerable number of my countrymen, who first begun to study the subject, from their intercourse with them, and observing their mode of cultivation. Most of these men, were thinking middle aged farmers, and were able to see the errors the Scotchmen fell into. They could thus distinguish between the wheat and chaff, then make improvements on the practice of the Scotchmen, or rather accommodate circumstances to the soil, climate, and markets, while the Scotchmen were too proud to change.

Englishmen, as well as Scotchmen, generally fall into the same error, when they remove from one county to another, to teach the natives how to farm. It is quite erroneous to bring a *young man, from any district*, and place him in another, for the purpose of improving its agriculture. They should be men of *middle age*, and *men* of *experience as rent-paying farmers*. It is also equally erroneous to bring a man of *any age*, except a *deep thinker*, from any of the eastern counties of Scotland, or from any *eastern, midland*, or

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southern county of England to teach either a Lancashire or Cheshire man how to farm. Our climate, soil, and markets would completely upset their preconceived notions of management.

If a gentleman wishes to improve the farming on his estate, why not introduce one of our *best* Lancashire farmers amongst his tenants; of which there are *many* very superior native farmers to be met with, and these would have far more influence on the tenants than a stranger. When a stranger is introduced to *teach the natives*, and *he fails*, it does a very great deal of injury; and I can with truth say this, that every stranger that has been introduced into this county, for this purpose, has had to *change* his system, or give up; whether he has come from the north or south, if he has farmed on his *own capital;* and it is only in this case that the *real merits* of the man, or the system can be proved. All the Scotchmen who have come to be agents or bailiffs, to noblemen, or gentlemen, have commenced by ploughing up old meadows and pastures; land, which a Lancashire man would not have been allowed to touch with the plough. They have by *these means* produced fine crops for a time. The Lancashire men have looked on, and said, "*Aye! I could do so too.*" Mr. Bigbie and Mr. Stavely, in the Fylde, are two very excellent farmers, and both very sensible men. They are the *the best Scotch farmers* on the Lytham estate; but, I will venture to predict, that both will change their systems if they stop upon their farms. However, I hope, that both have that good sense not to allow any false pride to interfere with their interest, and that both may yet live to be of great service to the agriculture of the Fylde district. Mr. Mc. Farlane, as an agent, and by his practice, in Speke, has done much; but, he had to change from his first notions. He is on a light soil, and in the best climate in the county, consequently had not so many difficulties to contend with as some strangers have had.

PRACTICE *versus* THEORY.—In this respect I am

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going to imitate Earl Grey, when he said that he should contend for "*his order.*" Not that I am going to undervalue either theory or science; but merely that the theoretical and scientific should have their proper place, I admit their great usefulness, even to the practical agriculturalists, but then I say and contend, that the practical man is the *more so.* What I ask, could or would the merely scientific, do without the practical; when thousands of farmers cultivate their farms, and profitable too, both for themselves, their county and their landlords; and without any knowledge whatever of science, or at least chymical science. Then there is a very great deal more known by practical men themselves, than they generally put in practice. Some have not the *means,* other have not the *will,* and some are short of *energy,* or of *determination* to put in practice what they know. These essentials are of far more importance than what is called scientific knowledge, and are far more difficult to attain. Habit is almost everything to a man; and if he has got a habit of *negligence* of *thoughtfulness* or of *procrastination,* he will never make a good farmer, whatever he may be possessed of, either of practical or scientific knowledge. If he be short of *means,* which I believe is the *principal want* of the great body of Lancashire farmers, it is then out of his power to put his practical knowledge into effect. Science is to assist practical men, and not to rule them; it can do *nothing without practice,* but practice can do a *great deal without science.* Chemists make all their experiments in their laboratories, and never take into consideration any collateral circumstances, which may counteract, or completely annul the results they arrive at. The vicissitudes of the weather for instance, whether as to moisture or temperature, are seldom, I am afraid considered. The favourable results arising from some portions of their theory, rest entirely on the supposition, that the farmer can command the weather. Their theory in feeding stock, is I believe strictly correct in many respects, but would not always answer in practice. To more fully explain my meaning, I will give you one instance.

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A certain learned Dr. in a speech at a Liverpool agricultural dinner, some years ago, and in his lectures on this subject, said, that if a pig or any other animal, feeding for the butcher, were placed in such a position, that no exercise could possibly be taken; and that it could only lie still and eat and drink, the greatest weight of flesh would be elaborated by the least quantity of food. Now the Dr. in making out his theory, had never taken into account one most essential point in feeding stock, and that is *comfort* to the animal, without which no animal will feed well. He also forgot, that an appetite is necessary in feeding, and to create this, exercise, less or more, must be had. If an animal *could rest with comfort,* cramped in *one position, and have an appetite without exercise,* then the Doctor's theory could be practised, and with favourable results. Very fortunately most parts of his theory, on feeding, which will answer in practice, has been acted upon or known a long time, and yet from want of practical knowledge on this subject, he thought his theory new.

In a great number of *Analyses* of mere scientific men, I have little faith; and there has lately been an instance, in Manchester, of the *fallacy* of some of them. On many points practice and theory are opposed, some of which are brought under notice in the report, and many other cases might be brought forward too tedious to mention.

My object in these remarks is, first to put practical men, in their proper sphere; and secondly to guard young farmers against placing too much reliance on theory, as I have known many young men ruined by it; and in other cases, a great waste of capital has been the consequence.

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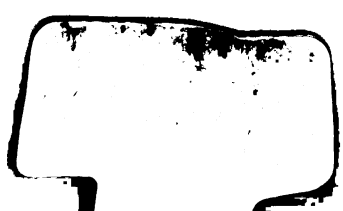

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